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Provision and Utilization of Complementary and Alternative Medicine (CAM) in Texas Hospices

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Dedication

This thesis is dedicated to my dear wife, Adebola Olotu for her patience and sacrifices that enabled me to pursue and fulfill my dreams.

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Abstract

Provision and Utilization of Complementary and Alternative Medicine (CAM) in Texas Hospices

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The purpose of this study was to describe the extent and nature of CAM services that are provided and used in Texas hospices. The study investigated the significance of hospice setting characteristics such as age, geographic location, agency type, profit orientation, Medicare certification, and number of patients served as they relate to the likelihood of offering CAM, using a robust methodological and analytical strategy.

Data was collected via self-administered mail surveys to 369 hospice directors in the state of Texas. A total usable response rate of 35.7% was obtained after an initial and one follow-up mail-out. A majority (N = 62, 56.4%) of hospices provided at least one type of CAM to their clients; however, a sizeable proportion of patients did not utilize the provided CAMs. The most frequently offered CAMs included massage, music, relaxation, spiritual healing and pet therapies with females and non-Hispanic whites being the most frequent users of these CAM services. Among CAM providers, short

length of stay and funding were the primary obstacles to CAM provision, with most hospices relying on a combination of general hospice funds and volunteers to sustain the delivery of CAM services. The odds of offering CAM in 'not-for-profit' hospices were approximately four times higher than in 'for-profit' hospices (OR = 3.77, p = 0.022), while the odds of offering CAM increased by 13% for every 100 patients served by hospices (OR = 1.131, p = 0.015). Other hospice setting characteristics were not significantly related to CAM provision.

In conclusion, a majority of hospices offered CAM services to their clients, although many patients are not utilizing these services. This observation might be connected with the fact that most CAM services are currently not being reimbursed through the Medicare Hospice Benefit, a government program that a majority of hospices depend upon for the coverage of substantial portions of their end-of-life services. Nevertheless, our study showed that CAM provision is related to the number of patients served and profit orientation status, but is not related to other measured characteristics of hospices.

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CHAPTER ONE: INTRODUCTION

1.1 COMPLEMENTARY AND ALTERNATIVE MEDICINE (CAM) USE IN THE UNITED STATES

Complementary and Alternative Medicine (CAM) use in the United States and the world is substantial (Eisenberg et al., 1998). According to the 2007 U.S. National Health Information Survey (NHIS), when prayer is excluded from the definition of CAM, almost 40% of non-institutionalized American adults used some form of CAM therapy in the past year. Furthermore, CAM use among the general population was found to differ by race and gender. Females use CAM more than males, while use in the American Indian/Alaska native (50%) and non-Hispanic white (43%) populations was greater compared to use in the black (26%) and Hispanic (24%) populations (Barnes et al., 2008).

In some people, religious or cultural beliefs serve as the motivation to use CAM. For others, the motive behind CAM use is the desire to improve health and well-being in conjunction with, rather than as an alternative to conventional medicine. This is because users believe the practice of CAM treats them holistically, with focus not only on the physical aspect of ill health, but also on the mental, social, emotional and spiritual aspects of their illnesses (Snyder, 2007).

However, the definition of what is considered alternative or conventional is somewhat unclear. It tends to depend, among other things, on the culturally and politically recognized form of medicine in a country, as well as on who is defining the

terms ‘alternative’ or ‘conventional.’ For example, Ayurveda – a widely practiced and politically recognized form of traditional medicine in India – is considered an alternative medicine in most of the Western world. In a similar vein, most U.S. states are now licensing more practitioners of CAM practices such as chiropractic that were originally considered a traditional alternative practice. Consequently, chiropractic is gaining wider acceptance and is as extensively practiced as any other mainstream medicine in the U.S. (Snyder, 2007). Because of this dynamism in what is considered CAM, there has not been a consensus about what really constitutes CAM. Many authors, including governmental agencies, have different views regarding the definition of CAM. A CAM definition held from a critical, but somewhat objective point of view is one by Fontanarosa and Lundberg (1998). They believed there is an evidence-based medicine (i.e., conventional medicine) which has been scientifically proven and an unsubstantiated medicine (i.e., most CAM practices) for which there is no scientific proof (Fontanarosa & Lundberg, 1998). A more optimistic assessment of what constitutes CAM was given by the National Center for Complementary and Alternative Medicine (NCCAM). They defined CAM as “a group of diverse medical and health care systems, practices, and products that are not generally considered part of conventional medicine” (NCCAM, 2010b). NCCAM classified CAM practices into one of five categories, with some practices such as acupuncture falling into more than one group. The recognized classifications include whole medical systems (e.g., Ayurveda and Traditional Chinese Medicine); mind-body medicine (e.g., yoga, meditation, qi gong and acupuncture);

natural products (e.g., dietary supplements and plant products such as Echinacea and ginseng); manipulative and body-based therapy (e.g., chiropractic, massage therapy and acupuncture); and energy medicine (e.g., reiki, qi gong and prayer).

Perhaps one of the greatest challenges that is limiting the acceptability and integration of most CAM practices and products into mainstream medicine is the lack of sufficient scientific evidence regarding their safety and effectiveness. This is because, compared to conventional medicine's rigorous experimental research designs, it is often difficult to design acceptable scientific experimental models in complementary medicine due to the unknown mechanisms of action of some CAM modalities (Giordano et al., 2005). However, one positive step towards evidence-based complementary medicine is the availability of adequate government funding for CAM research through NCCAM. It has been argued that this governmental effort should be complemented by a system of more established standards of CAM practices and board certification of CAM practitioners. The transparency and accountability that results from this initiative could enable more practitioners of CAM to begin to expect to earn the respect they deserve in the comity of medical practitioners (Eisenberg et al., 2002).

Despite the challenges enumerated above, the practice of complementary medicine has continued to increase because more people are seeking alternative means to improving their health and well-being. This is especially true among people who embrace complementary therapies because CAM manages their condition holistically, placing emphasis on the physical, mental, social and spiritual aspects of their illnesses (Connor,

2009). Such whole-system belief in complementary medicine is especially prevalent in people at the end of their lives who do not particularly require aggressive treatment for their illness (E. Ernst, 1998). They are often willing to accept palliative care for their troubling symptoms that some CAM therapies have been known to provide (Cassileth, 2004). Therefore, as more people live with chronic and debilitating diseases that limit functioning such as cancer and dementia, there will be a corresponding increase in the need for hospice and palliative care (Running, 2008).

1.2 HOSPICE AND PALLIATIVE CARE

The initial philosophy of the hospice and palliative care movement was to provide services to deserving patients, irrespective of their ability to pay (Pietroburgo, 2006). However, financial constraints and the need to expand led hospices to shift from a non-profit orientation with limited services, to one that offered comprehensive services. These services ranged from the provision of CAM for hospice patients to the provision of bereavement services for family members even before the death of their loved ones (Connor, 2009). Comprehensive services such as those provided in hospices are usually very expensive, with most clients unable to pay out of pocket. In 1982, the Medicare Hospice Benefit (MHB) was established to provide most hospices with end-of-life care reimbursement (Hoyer, 1998). However, payments for most CAM services are not covered under the MHB, with most hospices relying on a combination of volunteers, grants and donations to fund these services (Kozak et al., 2009).

1.3 CAM USE IN HOSPICE AND PALLIATIVE CARE

The availability and use of CAM services is a relatively new concept in U.S. hospices (Demmer, 2004). Many authors have purported that a majority of CAM therapies are both unsafe and ineffective, with claims of efficacy attributed only to placebo effects (Chung et al., 2006; Markman, 2002). However, a small but growing number of studies have demonstrated the effectiveness of some CAM modalities in helping cancer patients cope with their symptoms in palliative care settings. The efficacy of massage therapy at improving symptoms of nausea and anxiety has been investigated in a major cancer center (Cassileth, 2004). The researchers evaluated a large, retrospective observational study of 1,290 cancer patients over a 3-year period. A total of 3,609 massage therapies delivered to patients resulted in a 50% reduction in symptoms.

In another study, the effectiveness of each of therapeutic massage and healing touch in improving fatigue, anxiety and mood disturbance was investigated in a randomized controlled study of 230 cancer patients. Each intervention was administered every week for 45 minutes in a four-week period. Anxiety markers such as heart rate and respiration rate were significantly reduced when compared to the control group. Pain symptoms were also significantly lowered, with a resultant reduction in patients' use of non steroidal anti-inflammatory drugs (NSAIDs) over four weeks (Post-White et al., 2003).

The effectiveness of music therapy was described in a qualitative case study of three cancer patients in a hospice care setting. The music offered to these dying patients

provided them a new way to communicate and restore family bonds with their loved ones. Patients and caregivers reported their own quality of life was significantly improved as a result of the therapy (Starr, 1999).

Nevertheless, critics of CAM often argue that most of the studies described above lack rigorous methodological designs. For example, there is claim that most studies establishing CAM effectiveness are biased, with poorly stated and often unvalidated outcomes measures (Rajasekaran et al., 2005). In addition, some claim that instead of using randomized clinical trials – the acceptable gold standard in establishing efficacy – most CAM studies utilize qualitative research methods to establish the effectiveness of their therapies.

Several studies have investigated the effectiveness of individual CAM modalities in palliative care settings; however, there is a dearth of knowledge describing the utilization (i.e., level of CAM offering by providers and use by patients) of CAM therapies in these settings, particularly in hospices. In 2004, Demmer conducted the first national study that described the utilization of CAM (i.e., CAMs offered by providers and used by patients). In that study, each hospice director or a nurse with administrative privileges in 169 nationally representative and randomly selected hospices completed a mail survey of CAMs that were used in their facilities. Of the responding hospices (n = 169), 60% (n = 102) offered some form of CAM therapy with massage (83% of hospices), music therapy (50%), therapeutic touch (49%), pet therapy (48%) and guided imagery (45%) being the most frequently offered therapies. However, in the majority

(73%) of hospices that provided CAM, less than one quarter of patients utilized the CAM therapies (Demmer, 2004).

In a similarly structured study conducted by Running (2008), 27 hospices in Nevada and Montana completed a mail survey – utilizing a modified version of the Demmer questionnaire – of CAM therapies available to and used by hospice patients. Results not very different from Demmer's were obtained. Of the responding hospices (n = 27), 70% (n = 19) offered their clients at least one form of CAM therapy, with massage therapy (59% of hospices), music therapy (48%), guided imagery (48%), therapeutic touch (33%), and pet therapy (30%) being the most frequently offered CAM therapies. However, in the majority (53%) of hospices that offered CAM therapy, less than a quarter of patients actually used the services (Running, 2008).

Another study conducted by Kozak et al. (2008) tends to strengthen the observed trend shown by the two previous studies regarding the popularity of CAM therapy use in hospices. In this study, 36 hospices in Washington state completed a telephone survey – in contrast to mail surveys utilized in previous studies – of CAM therapies offered to and used by patients. Despite differences in methodology, the results of this study were similar to the results of the two previous studies (Demmer, 2004; Running, 2008) as it pertains to CAM therapy utilization in hospices. Of those who responded to the survey (n = 36), 86% (n = 31) offered their patients at least one type of CAM therapy with massage therapy (87% of hospices), music therapy (74%), energy healing (68%), guided imagery (45%), and aromatherapy (45%) being the most popularly offered CAM therapies.

However, in the majority (52%) of hospices that offered CAM, less than one quarter of the patients utilized the therapies offered to them (Kozak et al., 2009). The trend in all three studies seems to suggest that a majority of hospice providers actually offered a variety of CAM services to their clients; however, most patients were not utilizing them.

Compared to the three studies mentioned above, the results of the 2007 study conducted by Bercovitz et al. (2011) seems to suggest that fewer hospice providers offer CAM therapies to their clients; however, there seems to be some agreement with regards to the number of patients utilizing these therapies. This study, conducted by the Center for Disease Control and Prevention (CDC), utilized data from the 2007 National Home and Hospice Care Survey (NHHCS). The study involved personal interviews of the directors of 1,036 U.S. hospices and home-health agencies, and the 4,733 discharged patients of the hospices. Of the hospices that responded (n = 590), 42% (n = 248) offered some form of CAM therapy to their clients with massage therapy (72% of hospices), supportive group therapy (69%), music therapy (62%), pet therapy (59%), and guided imagery (53%) being the most frequently offered CAM therapies. However, even though 56% of the discharged patients received care from hospices that offered CAM, only about 5% of all discharged patients actually used at least one form of CAM therapy made available to them (Bercovitz, 2011).

The popularity of CAM use in the general population and the evidence supporting their use in palliative care suggest that complementary medicine may be beneficial to patients at the end of their lives. Research describing the use and potential benefit of

CAM therapies is one of the steps towards demonstrating the evidence for possible future integration with conventional medicine of those CAM modalities that are frequently offered and used in palliative care. Furthermore, this study and those before it could serve as references for discussions of issues relating to reimbursement for those CAM practices that are frequently offered and used in hospice care. Because few studies have been carried out to characterize the nature and delivery of CAM therapies in hospice settings, this study will add to the sparse body of knowledge currently available. This is the first study that will attempt to describe the extent and nature of CAM services that are offered and used in Texas hospices. In addition to this overall goal, this study will describe CAM utilization based on reported hospice patients' race or gender – important demographic characteristics not addressed in previous studies. More importantly, this study is among the first to examine intrinsic hospice characteristics and their relationship with the availability of CAM services using a robust methodological strategy. This strategy includes the use of predictive analysis (i.e., logistic regression) and the use of three directories in identifying potential respondents. Similar studies had only used descriptive and non-predictive analytical methods and utilized less than three directories in identifying potential hospice respondents. Lastly, this study will examine how hospices fund their CAM services, including the perceived obstacles and difficulties to the provision of CAM service.

CHAPTER TWO: LITERATURE REVIEW

2.1 WHAT IS CAM?

2.1.1 History and definitions of CAM

One of the challenges in the study of CAM is establishing a definition that is widely accepted by practitioners and researchers of CAM. It is usually not very clear whether CAM should be used to describe some modalities that have been widely integrated into conventional medicine (e.g., chiropractic and massage therapy), or whether the definition of CAM should include practices such as intercessory prayers – a CAM in which causality is difficult to establish – but which is nevertheless widely practiced and perceived to be effective by its practitioners (Institute of Medicine, 2005). Thus, there is no single consensus on what constitutes CAM. Most of the proffered definitions are approached from different points of view, depending on who is defining CAM.

A definition that portrays CAM as playing a valuable complementary role in the fields of conventional medicine is the one offered by Ernst et al. (1995). They defined CAM as 'diagnosis, treatment and/or prevention which complements mainstream medicine by contributing to a common whole, satisfying a demand not met by orthodox, or diversifying the conceptual framework of medicine' (E. Ernst, Resch, K.L. , et al., 1995). Another point of view is one which described CAM in terms of its appropriateness, dominance and popularity with the medical practitioners of a particular society (Gevitz, 1988). For example, traditional Chinese medicine (TCM) and Ayurvedic

medicine are popular and acceptable health practices in China and India, respectively. However, in the United States, these practices are not at the same level of acceptance and are not as widely practiced; therefore, they are often considered as alternative medicine.

Although Ernst and Gevitz are more optimistic and less critical in their definition of CAM, there are other authors who took a more scientific and objective approach. One such assessment is of the opinion that a medical practice is either adequately tested or not tested at all (Angell & Kassirer, 1998). This argument stems from the criticism that the claims of effectiveness of most CAM therapies are based on poorly conducted and often biased research methodologies. Two other researchers of CAM who further reinforced this view of lack of evidence-based medicine in CAM research wrote, 'There is no alternative medicine. There is only scientifically proven, evidence-based medicine supported by solid data, or unproven medicine for which scientific evidence is lacking' (Fontanarosa & Lundberg, 1998). However, in contrast to previous definitions of CAM, one author adopted a more systematic method of describing CAM by classifying CAM modalities as belonging to "either of quackery, folklore, unproven or untested, investigational or research, or proven" (Renner, 1990). This somewhat scientific classification of CAM is also supported by a large number of orthodox medical practitioners who view certain aspects of CAM as quackery, esoteric and without sound scientific backings. Since orthodox health care practitioners are the core components of most health care systems, it is therefore not surprising that little progress has been made

in the integration with mainstream medicine of those CAM therapies that have been scientifically proven effective and beneficial (Snyder, 2007).

However, even though the aforementioned authors held a rather pessimistic and critical view about the nature and practice of CAM, the definition offered by the National Center for Complementary and Alternative Medicine (NCCAM), a part of the National Institutes of Health, provides a level of legitimacy and official backing to the practice of CAM. An estimated $130 million appropriated for CAM research through NCCAM in the fiscal year 2010 is evidence of governmental support of CAM (NCCAM, 2010a). Hence, NCCAM has defined CAM as "a group of diverse medical and health care systems, practices and products that are not presently considered to be part of conventional medicine" (NCCAM, 2010b). This means that some of the practices that are considered CAMs today could turn out to be mainstream medicine tomorrow. Chiropractic and massage therapies are examples of such practices that have gained wide popularity and acceptance among the general population.

2.1.2 Domains of CAM

Just as it was difficult ascertaining a widely accepted definition of CAM, several suggestions have also been proposed to classify the various CAM modalities. One approach attempts to differentiate practices such as massage and chiropractic that are practitioner-administered from practices such as yoga and prayer that patients can administer themselves (Snyder, 2007). However, a widely acknowledged approach for classifying CAM is the one that was proposed by NCCAM. In this categorization,

NCCAM grouped the various CAM modalities into five broad domains, with some practices occurring in more than one of the groups. For example, acupuncture is considered a part of mind-body medicine, but it is also believed to be a constituent of manipulative and body-based therapy and energy medicine. The five domains that are recognized by NCCAM include: whole medical systems; mind-body interventions; natural products; manipulative and body-based methods; and energy therapies (NCCAM, 2010b). Below is a description of each of the five CAM domains:

Whole Medical Systems

Whole medical systems are a complete system of theories and practices that have evolved over time in different cultures. These systems include the ancient Traditional Chinese Medicine (TCM) and Ayurvedic medicine, and the more recently developed systems of homeopathy and naturopathy (NCCAM, 2010b). Both TCM and Ayurveda are indigenous and recognized forms of health practices in China and India, respectively. However, according to most western countries including the U.S., most aspects of these practices are esoteric and metaphysical in nature, often without adequate scientific evidence to support claims of safety and effectiveness (Singh & Ernst, 2009). Nevertheless, despite these criticisms, there is evidence supporting wide use and acceptability of these practices, especially in their indigenous cultures. For example, ginseng is a TCM remedy that is used both as an aphrodisiac and in the treatment of type II diabetes (Kiefer & Pantuso, 2003). In addition, certain Chinese herbs are effective for treating chronic fatigue syndrome (Jiaxu & Weiyi, 1999) and chronic idiopathic pain

(Borten, 2009) in palliative care settings. On the other hand, Ayurveda utilizes modalities such as exercise, yoga, meditation and massage to maintain the balance of three elemental human energies known as *vata, pittar*, and *kapha*. These energies do not have proven scientific philosophy, yet an Ayurvedic practitioner believes an imbalance in any of them causes disruption to the normal functioning of the mind, body and spirit of humans, while a perfect balance promotes a sense of peace and well-being (Snyder, 2007). In the palliative care settings, Ayurvedic modality such as yoga has been used to manage pain (Nespor, 1991) and to restore spiritual harmony (Dane & Moore, 2005), while homeopathy has been used as a holistic aid to decrease disease progression in HIV patients who are unable to afford the high costs of conventional antiretroviral drugs (Deshmukh, 2007).

Mind-Body Medicine

The majority of CAM practices are classified under the mind-body intervention. Some of the practices under this category are considered useful and popular, for example, meditation and yoga (Canter, 2003), yet others such as Qi Gong and Tai Chi are less popular and therefore viewed with skepticism by the medical community (Chu, 2004). Critics believed most claims of efficacy proclaimed by proponents of these practices are usually not backed up with sound, empirically-based evidence (Filshie, 2001). The difficulty in setting up a verifiable experimental protocol that could objectively measure efficacy and safety is one reason usually given for such lack of evidence-based medicine. For example, people of faith are known to believe in the efficacy of prayer, but it is

almost impossible to both reasonably and empirically design an experiment that can test this hypothesis. Therefore, critics will usually argue that the body has a natural ability to resolve some of its problems without any outside intervention; thus, they believe that the effectiveness of mind-body therapies are unreal and probably are due to "wishful-thinking" and placebo effects (Snyder, 2007). Despite this criticism, certain aspects of mind-body techniques are now being popularly utilized in mainstream medicine. For example, cognitive behavior therapy utilizes the mind to affect the physical function of the body in order to promote a sense of health and well-being in the management of depression and schizophrenia. Even though fraught with biased methodologies, other mind-body practices that have been deemed effective and employed in the management of various ailments in palliative care include: acupuncture (Standish et al., 2008), music therapy (Magill & Berenson, 2008), yoga (McDonald et al., 2006), and guided imagery and meditation (Choi, 2010).

Biologically-based therapies

Natural or biologically-based products is a broad classification that includes herbal medicine, dietary supplements, minerals, probiotics, prebiotics, and plant products such as Echinacea, ginseng, ginger and garlic supplements, and St. John's wort. The purpose of use of a natural product often determines whether it is classified as a medicine or a nutritional supplement. For example, if St. John's wort is used in place of fluoxetine – a conventional anti-depressant – for the treatment of depression, then it is considered an alternative medicine rather than a nutritional supplement. Conversely, the use of

multivitamins for the purpose of supplementing daily nutritional requirements will not be termed as alternative medicine. It is when such dietary supplements are used solely for the purpose of diagnosis or treatment that they are then considered an alternative medication (NCCAM, 2010b). Critics argue that because most of these biologically-based products are easily available without a doctor's prescription, the potential for drug-drug interactions and consequent adverse drug events may be high.

Furthermore, like other aspects of CAM, they believe claims of effectiveness and safety of natural products have not been supported by rigorously conducted research. Therefore, in order to ensure public safety, one author recommends that the Food and Drug Administration (FDA) ought to take the lead by subjecting the majority of CAM products to the same level of rigorous pre- and post-marketing scrutiny required for prescription medications (Snyder, 2007).

Nevertheless, studies have shown that certain natural products are effective in end-of-life care even though there is a high probability of interaction if co-administered with other medications, conventional or alternative. Clinical guidelines from the American College of Physicians-American Society of Internal Medicine suggest that St. John's wort can be considered an option along with conventional antidepressants for short-term treatment of mild depression (Snow, 2000). Research has shown St. John's wort to be effective for managing a wide variety of disease conditions, including depression (Vorbach, 1997) and wound healing (Samadi, 2010). A plethora of natural products have been found to be effective in palliative care, including Chinese club moss

that is used for the management of dementia (Xu, 1995), and passion flower that is used for anxiety reduction (Miyasaka et al., 2007) and relieve of symptoms of opiate withdrawal (Akhondzadeh, 2001).

Manipulative and Body-based Therapies

From the ancient local bonesetters to the modern day chiropractors, manipulative and body-based therapies such as chiropractic, acupuncture, reflexology, spinal manipulations and massage therapy are some of the most accepted and widely used forms of CAM in the U. S. (Barnes et al., 2008). These therapies are used to manage conditions involving the bones and joints, soft tissues, and circulatory and lymphatic systems (NCCAM, 2010b). Compared to other CAM modalities, several aspects of manipulative therapies have been widely incorporated and utilized in recent times by various conventional health care professionals, including physiotherapists, physical therapists, and osteopaths. In particular, the success of chiropractic as an alternative practice in the U.S. has been anchored largely on the fact that it is a highly regulated profession that utilizes modern diagnostic techniques and requires board certification of its members (Meeker & Haldeman, 2002; Snyder, 2007). Apart from being popularly used in the mainstream population, manipulative therapies have been shown to be useful in end-of-life care. For example, massage and chiropractic therapies are useful in the management of body and back pain (Orzehowski & Dick, 2001; Wilkie et al., 2000), idiopathic scoliosis (Tarola, 1994), and constipation (Preece, 2002). Acupuncture has found use in the management of lumbar myofascial pain (Ceccherelli, 2002), chemotherapy-induced

nausea and vomiting (Ezzo et al., 2006; Nystrom et al., 2008), xerostomia (Johnston et al., 2008), and fibromyalgia (Singh et al., 2006).

Energy Therapies

This CAM category is perhaps one of the least understood and the most controversial of all CAM practices (Snyder, 2007). The main theory behind energy medicine is that ill health is caused by an imbalance of energy fields (e.g., qi in TCM, and *prana* in Ayurvedic medicine) surrounding the body. These biofields have to re-balance in order for harmony and health to be restored to the body. Energy fields are divided into veritable or putative energies depending on whether or not they have been confirmed or verified by quality scientific research such as systematic reviews of randomized controlled trials (RCT). Veritable energies such as magnetic and light energies rely on forms of energy (i.e., electromagnetism) that already has wide application in the field of modern medicine. However, it should be noted that mainstream electromagnetic applications such as magnetic resonance imaging, electrocardiograms, radiation therapy and ultraviolet light for psoriasis are not considered 'energy medicine' in terms of complementary medicine (Snyder, 2007). On the other hand, putative energies such as qi gong, Reiki, healing touch, therapeutic touch, distant healing and prayer are the more esoteric and controversial forms of energy medicine. The rationale behind their effectiveness is difficult to verify using an objective methodological approach. For example, critics believed it is beyond logical and scientific reasoning for some form of energy (for example, in therapeutic touch) to be channeled from the hands of the

practitioner to effect healing in the body of a patient. Similarly, even though there may be some reason to believe in the efficacy of faith healing through intercessory prayers, the effectiveness of this practice is difficult to establish by sound methodological experimentation. Hence, conventional medicine practitioners view many aspects of putative energy medicine with suspicion, associating most of the perceived efficacy to optimism, placebo effect, wishful thinking and publication bias (Markman, 2002).

Nevertheless, several studies have described the prevalence and usefulness of various aspects of CAM, including energy medicine, both in the U.S. general population as well as in the hospice and palliative care setting (Barnes et al., 2008; Bercovitz, 2011; Demmer, 2004; Eisenberg et al., 1998; Kozak et al., 2009; Nahin et al., 2009; Running, 2008). See Table 2.1 below for a summary of the CAM categories and selected corresponding modalities.

Table 2.1: CAM Categorization with Selected Examples within each Category

CAM Categories	**Modalities**
1. Whole medical systems	Ayurveda, Traditional Chinese Medicine, Homeopathy, Naturopathy.
2. Mind-body medicine	Acupuncture, Aromatherapy, Art therapy, Hypnotherapy, Guided imagery, Meditation, Music therapy, Yoga, etc.
3. Biologically-based therapies	Dietary supplements, Medicinal herbs/plants, Botanicals, Animal-derived extracts, Prebiotics, Probiotics, Whole diets, etc.
4. Manipulative and body-based therapies	Acupuncture, Chiropractic, Massage therapy, Osteopathy, Reflexology, Spinal manipulation, Shiatsu, etc.
5. Energy medicine	Acupuncture, Qi gong, Reiki, Healing touch, Therapeutic touch, Distant healing, Prayer, etc.

2.2 WHAT IS HOSPICE AND PALLIATIVE CARE?

2.2.1 History, definition, and philosophy of hospice care

Hospice is a term derived from the Latin word *hospitium*, which means hospitality. The American Heritage Dictionary of the English Language defined a hospice as 'a shelter or lodging for travelers, pilgrims, foundlings, or the destitute, especially one maintained by a monastic order.' (The American Heritage Dictionary of the English Language, 2006). However, a more modern philosophical concept has emerged from this older idea of what a hospice represents. Much of the principles and foundation on which the modern concept of hospice care is based was pioneered by Dame Cicely Sanders – often regarded as the mother of the hospice movement – in the 1950s, but it was not until the 1970s that hospice care became established in the U.S. (National Hospice and Palliative Care Organization, 2010b). Today, hospice is defined as programs that provide palliative and supportive care to patients at the end of their lives. This care is provided primarily by a family member of the patient and supplemented by an interdisciplinary team of professionals and volunteers in the place the patient calls "home" (i.e., home-based care), or in standard in-patient facilities (Connor, 2009). Hospice practice has evolved from the once non-profit entities into a more organized, largely profit-oriented and regulated practice with established philosophies of care.

The values and beliefs of hospice care, prescribed by the National Hospice and Palliative Care Organization (NHPCO) – the oldest and largest non-profit membership organization representing hospice and palliative care programs and professionals in the

U.S. – represents the core principles that guide hospice practices in the U.S. (National Hospice and Palliative Care Organization, 2010a). Among others, one such principle affirms that the dying process is part of the normal process of living, where support and care are provided to relieve pain and symptoms, and where the quality of life of a terminally ill patient is enhanced without necessarily prolonging or hastening death. In addition, home or facility-based supportive care is provided 24 hours per day to patients and their families without discrimination based on age, race, disability, disease or the ability to afford hospice services. Furthermore, the hospice philosophy affirms that all forms of supportive care that will holistically address the physical, social, mental, spiritual and emotional needs of the patients are considered, whether they are conventional or alternative in nature (NHPCO, 2000).

2.2.2 Hospice structure, characteristics of hospice patients, and utilization of hospice services

The growth and development of hospices in the U.S. mean that terminally ill patients now have more access to expert and quality care that have the potential of improving and prolonging their lives. Figures from the annual report of NHPCO regarding hospice care indicate that in 2009, an estimated 1.56 million patients received care across all U.S. hospices. A breakdown of this estimate indicates that the proportion of hospice patients who received care that are females (54%) is greater compared to the proportion of males (46%) that received care. Similarly, a greater proportion of hospice patients who received care were non-Hispanic whites (80%) compared to black/African

Americans (9%), Asians/Hawaiians/Pacific Islanders (2%), American Indians/Alaska Natives (0.2%), and Multiracial/Other Races (9%). Analysis based on ethnicity indicated that 95% of the patients were of non-Hispanic origin and utilized hospice services more, compared to 5% of the patients who were of Hispanic or Latino origin (National Hospice and Palliative Care Organization, 2010b). The growth of hospice care in the U.S. is an indicator that terminally ill patients require specialized care that has the potential of improving quality of life and abating symptoms even as they approach the end of their lives (Running, 2008).

Studies have indicated that a patient who received hospice care is reported to have a mean survival of 29 days longer than a similar patient who received standard care (Connor et al., 2007). However, the length of stay – the total number of days a patient receives hospice care – is often dependent upon such factors that include prognosis of the disease, timing of patient referral and access to care. Thus, patients will have shorter or longer hospice stays (i.e., dies, discharged alive, or remained in the hospice) depending on the time they accessed hospice and their disease progression.

Hospice care is usually provided either in a place the patient calls "home," or in an in-patient facility. The majority (70%) of hospice patients receive care in the place they call "home" (i.e., private residences, nursing homes and residential facilities), compared to other hospice care units such as hospice in-patient facilities (20%) and acute care hospitals (10%) (National Hospice and Palliative Care Organization, 2010b). As more Americans become aware of the importance of giving specialized hospice care to

their terminally ill family members, there has been a corresponding increase from the first hospice which opened in 1974, to about 5,000 such programs today (National Hospice and Palliative Care Organization, 2010b).

Hospices are generally structured according to agency types with a majority (58%) of programs being independent or freestanding hospices, while others are a part of hospital systems (21%), home-health agencies (20%), or nursing homes (1%). Often, these hospices are also organized based on their sizes and profit orientation. Thus, hospices range from small, not-for-profit organizations that provide hospice care to few patients, to large, often profit-oriented chain agencies that provide care to thousands of patients. Figures based on the 2009 NHPCO survey data indicated that most hospices are not-for-profit (49%), compared to for-profit (47%), and government-owned programs (4%). Furthermore, on the average, a typical U.S. hospice admits about 116 patients on a daily basis, while in general, a majority (80%) of U.S. hospices serve about 500 patients on a yearly basis (National Hospice and Palliative Care Organization, 2010b).

One of the major challenges facing hospice patients is the ability to access and pay for services. In the 1970s, most hospice services were funded through grants and volunteer work. However, as the aged population grew, hospice services could no longer be sustained on volunteer effort; therefore, hospices had to devise better ways to fund their multidisciplinary care. Because most (83%) hospice patients are 65 years or older and already cared for through the Medicare program, the Congress enacted the Medicare Hospice Program in 1982 to increase access to hospice care for the aged population. To

qualify for the Medicare Hospice Benefit (MHB) therefore, a hospice patient must be terminally ill and with a prognosis of 6 months or less, assuming the disease runs its normal course. In addition, such a patient must be willing to receive palliative care instead of curative and aggressive treatment of his/her disease(s) (Center for Medicare & Medicaid Services, 2010).

Most hospices have found the MHB to be a more stable and dependable source of funding for their services; as a result, more hospices are enrolling and becoming Medicare certified. As of 2009, there were more than 3,400 Medicare certified hospices, representing about 93% of all hospices in the U.S. Thus, a majority (83%) of hospice patients receive hospice care through the MHB compared to care provided through private insurance (8%), charity care (1%) and self pay (1%) (National Hospice and Palliative Care Organization, 2010b). However, even though terminally ill patients can pay for their hospice care through the MHB, it appears that a substantial proportion of CAM services are not compensated through the MHB. This is evidenced by results of studies on CAM use in hospices which indicated that a majority of hospices often depend on a combination of volunteers, grants and charity to help in the funding and provision of CAM services (Demmer, 2004; Kozak et al., 2009).

2.3 PREVALENCE OF CAM USE

2.3.1 CAM use in the general population

Few studies have described the use of CAM therapies in the non-institutionalized U.S. adult population. Eisenberg et al. (1993, 1998) conducted the first of such studies

that documented the trends of alternative medicine use between 1990 and 1997. In that study, a random household telephone survey was conducted of 1,539 and 2,055 adults in 1990 and 1997, respectively. The result indicated that an estimated 34% (i.e., 60 million) of the U.S. adult population used CAM in 1990, and this significantly increased to 42% (i.e., 83 million) in 1997 (Eisenberg et al., 1998; Eisenberg et al., 1993). Significant increases in use were found for 10 of the 16 CAMs investigated, including herbal remedies, massage therapy, megavitamins, self-help groups, folk medicine, energy healing and homeopathy. Furthermore, CAM use was significantly higher in women (50% of adult women) compared to men (38%); while use in the African American (33%) population was significantly lower compared to use in other racial groups (45%). Apart from gender and race, use of CAM was found to be positively correlated with respondents' educational and income levels (Eisenberg et al., 1998; Eisenberg et al., 1993).

About a decade after the Eisenberg et al. (1993, 1998) studies, Barnes et al. (2008) found similar trends in the use and prevalence of CAM with respect to types of CAM, as well as in gender, race, education level and income of respondents. These estimates were obtained from the 2007 National Health Interview Survey (NHIS), a periodic health survey conducted by the National Center for Health Statistics, a branch of the Center for Disease Control and Prevention (CDC). In this study, personal interviews of a nationally representative sample of 23,393 adults and 9,417 children were completed in 2007. When prayer is excluded in the definition of CAMs investigated, study results

indicated that about 40% (i.e., 83 million) of the adult U.S. population have used some type of CAM in the past year. Consistent with the 1998 Eisenberg et al. study, the proportion of CAM use was found to be higher among women (43%) than men (34%), while the proportion of CAM use was higher in the Alaska Native/American Indian (50%), non-Hispanic white (43%) and Asian (40%) adult populations, compared to the Hispanic (24%) and black (26%) adult populations (Barnes et al., 2008).

Furthermore, in comparison to the results of the 2002 NHIS study (Barnes et al., 2004), trends of CAM use between 2002 and 2007 suggest a significant increase in the use of acupuncture, deep breathing exercises, massage therapy, meditation, naturopathy and yoga. Increases in the use of these practices were found to be related to increased awareness of the potential benefits of CAM practices due to advertisements, as well as increases in the number of states that are issuing licenses to practitioners of these CAM practices (Barnes et al., 2008). This increase in use is inconsistent with the opinion of critics of CAM practices who argue that claims of efficacy and safety of CAM modalities are often not supported with enough scientific evidence. Nevertheless, such fears are not without legitimacy and can be allayed if adequate consideration is given to the transparency of CAM practices and professionalism of CAM practitioners (Snyder, 2007).

Apart from clinical consequences, studies have shown that the prevalence and importance of CAM practices can be better appreciated when expenditures on CAM products and practitioners are viewed in light of expenditures on other vital aspects of

healthcare. For example, reports have shown that the total yearly out-of-pocket expenditures on CAM increased from an estimated $27 billion in 1998 to an estimated $34 billion in 2007 (Eisenberg et al., 1998; Nahin et al., 2009). This $34 billion out-of-pocket estimate – comprising $22 billion and $12 billion spent on CAM products and CAM practitioners, respectively – is equivalent to 11% of the total out-of-pocket health care expenditures in 2007. A further breakdown of these expenditures indicates that 44% of the $34 billion total out-of-pocket CAM expenditures are spent on natural products alone. This amount (i.e., $15 billion) that was spent on the purchase of natural products is estimated to be equivalent to 31% of the total out-of-pocket expenditures on conventional drugs in 2007 (Centers for Medicare & Medicaid Services, 2007).

2.3.2 CAM use in the hospice and palliative care population

Apart from CAM use in the general population, the use of CAM in hospices seems to be congruent with the values and philosophies upheld by hospices. This philosophy upholds and recognizes all forms of therapy that could help alleviate the pain and suffering of patients at the end of their lives (National Hospice and Palliative Care Organization, 2010a). CAM products and services occupy one such unique position because people who use CAM are typically seeking other ways to improve their health and well-being. Furthermore, CAM is perceived to be holistic in nature, and known to be associated with the cultural beliefs and values of its users. Therefore, in addition to the physical component of ill health which conventional medicine is known to address, CAM

is valued because it also addresses the social, emotional, cultural and spiritual aspects of the patient's illness(es) (Institute of Medicine, 2005).

Few studies have investigated the use of CAM in U.S. hospice patients. Demmer conducted a pioneer study involving a national mail survey of the prevalence of CAM use in 300 hospices in 2004. Of the 169 hospices that responded, 60% of them offered some form of CAM to their clients, with the most frequently offered therapies being massage therapy (83% of providers), music therapy (50%), therapeutic touch (49%), pet therapy (48%), and guided imagery (45%). However, in the majority (73%) of the hospices that offered CAM, less than 25% of the patients actually utilized the available therapies (Demmer, 2004).

Trends similar to the 2004 Demmer study have been found in later studies (Bercovitz, 2011; Kozak et al., 2009; Running, 2008) concerning the proportion of hospices offering CAM services as well as the popularity of CAM products. One such study involves estimates from the 2007 National Home and Hospice Care Survey (NHHCS) conducted by the CDC's National Center for Health Statistics. CAM utilization data collection involved personal interviews of hospice directors in 1,036 hospice and home-health agencies. Study results indicated that about 42% of all U.S. hospice care providers offered CAM services to their clients with the most frequently offered CAM modalities being massage therapy (72% of providers), music therapy (62%), pet therapy (60%), guided imagery (53%) and therapeutic touch (48%) (Bercovitz, 2011). In addition, there were positive associations between the offering of

CAM and both the number of other hospice care services already offered and the type of hospice ownership. Specifically, in agencies that offered wider varieties of other hospice care services, 52% of them offered CAM services compared to 28% that offered CAM in agencies that provide fewer varieties of hospice services. Similarly, the proportion of not-for-profit hospices (68%) that offered CAM was significantly greater compared to the proportion of for-profit hospices (38%) that offered CAM (Bercovitz, 2011).

Trends of CAM prevalence in statewide surveys of hospices (Kozak et al., 2009; Running, 2008) were similar to those obtained from hospices that were nationally surveyed (Bercovitz, 2011; Demmer, 2004). Running (2008) conducted a mail survey of all 54 hospices (response rate = 50%) in Nevada and Montana that were identified through the U.S. Hospice directory. In this study, a modified version of the instrument developed by Demmer (2004) was used to elicit responses from potential respondents. These respondents were either the hospice director or a hospice staff person with an administrative position. Of the hospices that responded (n = 27) to the mail survey, 70% offered some form of CAM to their clients; however, in the majority (53%) of the hospices that offered CAM, less than a quarter of the patients actually utilized the available CAMs (Running, 2008). Furthermore, in consonance with CAM prevalence in other studies (Bercovitz, 2011; Demmer, 2004), the most widely offered CAM therapies in the Running (2008) study included massage therapy (59% of providers), music therapy (48%), guided imagery (48%), therapeutic touch (33%) and pet therapy (30%). The least

offered therapies included biofeedback (4% of providers), yoga (7%) and acupuncture (11%).

A trend similar to the three studies described above (Bercovitz, 2011; Demmer, 2004; Running, 2008) was found in another statewide survey of CAM use in Washington state hospices that was conducted by Kozak et al. in 2008. In this study, a telephone survey was conducted – in contrast to the mail surveys and personal interviews utilized in previous studies – that involved 36 hospices identified through the directories of the Washington State Hospice and Palliative Care Organization. A 100% response rate was obtained from the respondents, which was either the hospice director or a nurse with administrative privileges. Study results that were not very different from those obtained in previous studies indicated that 86% of the hospices offered at least one type of CAM service to their clients. In addition, the most widely offered services included massage therapy (87% of providers), music therapy (74%), energy healing (68%), guided imagery (45%), and aromatherapy (45%). The least offered therapies included hypnotherapy (16%), reflexology (19%), and art therapy (22%) (Kozak et al., 2009). Table 2.2 below summarizes the methodology and key findings of studies of CAM use in U.S. hospices.

Table 2.2: Summary of CAM Provision in U.S. Hospices

	Demmer, 2004	**Running, 2008**	**Kozak et al., 2009**	**Bercovitz, 2011**
Survey method	Mail	Mail	Telephone	Face-to-face
Coverage	Nationwide	Statewide (Nevada and Montana)	Statewide (Washington state)	Nationwide
Number of respondents	169	27	36	590
Response rate (in %)	56	50	100	57
Percentage of hospices that offered CAM	60	70	86	42
Most popularly offered CAMs	Massage therapy Music therapy Therapeutic touch Pet therapy Guided imagery	Massage therapy Music therapy Guided imagery Therapeutic touch Pet therapy	Massage therapy Music therapy Energy healing Guided imagery Aromatherapy	Massage therapy Supportive therapy Music therapy Pet therapy Guided imagery

2.3.3 Evidence and challenges of CAM use in hospice and palliative care

Due to the popularity of CAM usage in the general population and the belief that some CAM practices are effective, proponents of CAM have expressed the desire of integration with mainstream medicine of those CAM practices that have been "scientifically proven safe and effective." However, conventional medical practitioners often view with caution and skepticism the notion of full integration with mainstream medicine of such "proven" CAM practices. A critical assessment of such concern is not without some validity because studies have shown that claims of efficacy attributable to CAM therapies are often based on anecdotal evidence and case series rather than rigorously designed scientific experimentation which is the gold standard in conventional medicine (E. Ernst et al., 2003). For example, in a systematic review of 27 studies involving the use of hypnotherapy for the treatment of symptoms of cancer in terminally ill patients, 24 of the studies involved case series, while the rest involved a randomized control trial (RCT), an observational study, and a retrospective study (Rajasekaran et al., 2005). Furthermore, a thorough evaluation of most of the studies – especially the case series – suggests the use of faulty methodologies in arriving at a claim for effectiveness of hypnotherapy. Some of the problems associated with the study designs included lack of control for confounding variables, non-use of validated outcomes measures, and the influence of publication bias. Consequently, the argument for integration of 'scientifically proven' CAM therapies and conventional medicine is weakened continually because

evidence of effectiveness is perceived not to be based on sound scientific methodological designs.

Despite this point of view, numerous studies have documented claims of CAM effectiveness that utilized sound scientific methodologies (Johnstone et al., 2002; Lafferty et al., 2006; Nystrom et al., 2008; Standish et al., 2008). A systematic review of 27 RCTs involving the use of acupuncture suggests that 23 of the trials showed effectiveness of acupuncture in significantly mitigating various cancer-related symptoms (Standish et al., 2008). Specifically, acupuncture was found to be significantly effective in reducing the intensity of nausea and vomiting associated with chemotherapy (Nystrom et al., 2008), and xerostomia (Johnstone et al., 2002) in terminal cancer patients receiving palliative care.

Another systematic review of 27 RCTs involving massage therapy indicated that 26 of 27 showed significant evidence in improving symptoms such as anxiety, emotional distress and pain of terminally ill cancer patients. However, it was difficult to evaluate the significance of the evidence for the effectiveness of massage therapy in alleviating these symptoms due to inconsistencies in the methodology employed by the studies (Lafferty et al., 2006). Apart from RCT studies, the effectiveness of massage therapy has also been evaluated in some case studies where cancer patients reported a significant relief of constipation (Preece, 2002), and a significant reduction in pain intensity and improvement in quality of life (Buckley, 2002).

In CAM practices that are perceived to have unclear mechanisms of action, providing evidence of effectiveness through an articulately designed scientific experimentation is problematic. It is oftentimes difficult and challenging to design experiments that can demonstrate efficacy and effectiveness in CAM therapies such as music therapy, reflexology, reiki, yoga, and therapeutic touch. For these kinds of therapies, there is difficulty in designing an acceptable scientific trial that will differentiate if the therapies are truly therapeutic, or if effects are due to placebo. For example, an observational case study of the beneficial effects of music therapy in palliative care reveals an increase in wakefulness due to a reduction in anxiety and agitation of terminally ill patients (Freeman et al., 2006). However, the beneficial effect of music at relieving stress is often undisputed even in healthy individuals. Therefore, in order to provide evidence of effectiveness, it becomes imperative to utilize a methodologically sound scientific study such as a randomized control trial in evaluating if these effects are indeed therapeutic, or if they are simply due to placebo effects. It is the opinion of some scholars that music might indeed reduce anxiety on the short term, but that it neither increases the tolerance to pain, nor produces a long-lasting usefulness in pain reduction (Hemming & Maher, 2005).

Despite the lack of rigorous scientific evidence to support effectiveness and safety in a large number of CAM practices, reports of the clinical usefulness of alternative therapies with poorly understood theories abound in the literature. For example, there is evidence to suggest the effectiveness and use of acupuncture, spinal manipulations and

homeopathy in the treatment of stroke and tension-type headaches (Shah et al., 2008; Vernon et al., 1999; Whitmarsh, 1997). Furthermore, diet-based natural products containing chromium and magnesium have been suggested for the management of type 2 diabetes (Guerrero-Romero & Rodriguez-Moran, 2005; Jones et al., 2006). In addition, aromatherapy and dog-assisted therapy have been found to be useful for older people with dementia (Lin et al., 2007; Perkins et al., 2008). Finally, and in consistency with conventional beliefs, natural products such as ginseng, Echinacea, sage, and herbal teas – believed to contain vitamin C and various antioxidants – are claimed to be effective in the management of the common cold (Parkman, 2001; Schmiedel & Klein, 2006; Simasek & Blandino, 2007).

The lack of scientifically sound evidence to support claims of CAM effectiveness is not the only obstacle limiting CAM use in palliative care settings such as hospices. Studies have shown that hospices are willing to provide CAM services to their patients, but that they are often faced with practical challenges that threaten such enthusiasm (Demmer, 2004; Running, 2008). The majority of the obstacles encountered in the provision and utilization of CAM services in hospices has been found to revolve around funding, as well as the difficulties involved in recruiting and maintaining CAM practitioners. The 2004 Demmer study of CAM services provided by hospices indicated that lack of funding was the biggest challenge to providing CAM services. Consequently, hospices tend to rely primarily on volunteers, with about 45% of the hospices in the study not having regularly paid staff to deliver CAM services to clients (Demmer, 2004). In a

similar study of CAM utilization in hospices by Kozak et al. (2009), 93% of the hospices were found to rely on a combination of volunteers, grants and charity donations to fund CAM provision. In addition to funding issues, other difficulties that were found to jeopardize the growth, adoption, provision and utilization of CAM include inadequate knowledge of CAM by hospice staff, lack of expertise and proficiency of hospices in providing CAM services, and resistance to CAM use by patients and their families (Demmer, 2004).

2.4 BRIEF SUMMARY OF LITERATURE REVIEW

CAM has been found to be useful both in the non-institutionalized public and in terminally ill patients residing in hospice facilities (Barnes et al., 2008; Demmer, 2004; Kozak et al., 2009; Running, 2008). Studies involving CAM are important because the use of CAM has both clinical and economic implications for the public as well as the patients residing in hospice facilities. A recent study conducted by the CDC's National Center for Health Statistics in 2007 indicated that about 83 million non-institutionalized U.S. adults are using some form of CAM product or service (Barnes et al., 2008). This is significant because, apart from the potential adverse effects that could result from drug-drug interactions between over-the-counter CAM products and prescribed medications, the economic implications of CAM use are also vast. Such economic consequence is evidenced by the estimated $15 billion that is expended out-of-pocket for the use of natural products alone in 2007, with this amount being equivalent to about 31% of the

total out-of-pocket expenditures on both conventional OTC and prescription drugs (Center for Medicare & Medicaid Services, 2007).

However, even though studies showed that CAM use is not as commonly accepted among terminally ill patients in palliative care compared to its use by the public, CAM use in patients at the end of their lives is often related to the nature and philosophy of hospice care. This philosophy of care affirms and considers all supportive care that can alleviate the pain and suffering of terminally ill patients. CAMs such as acupuncture, yoga and massage belong to this spectrum of supportive care that has the potential to improve the quality of life of patients at the end of their lives. A majority of people who use CAM do so as a complement, rather than as an alternative to conventional medicine. Some find the use of CAM appealing, because in addition to the treatment of their physical ailment, CAM also addresses the social, emotional, and cultural aspects of their illnesses. Others opt for CAM either because they want better control over their health, or are not satisfied with conventional therapy (Astin et al., 1998). Therefore, in response to the diversity of needs of hospice patients, studies have shown that most hospices offer a variety of CAM services, with massage and music therapies being the most widely offered services (Kozak et al., 2009). However, despite the availability of many of these services in hospices, studies showed that hospice patients are not utilizing the services to a great extent (Running, 2008).

Therefore, the overall goal of this study is to investigate the prevalence of CAM utilization (i.e., offer by hospices and use by patients), and the obstacles associated with

CAM utilization (i.e., delivery by hospices and use by patients) in Texas hospices. This is the first such study of CAM prevalence and use in Texas hospices. Apart from adding to the sparse body of knowledge regarding CAM utilization in U.S. hospices, an important addition of this study – in contrast to previous studies – is the utilization of a predictive strategy to examine those factors that influence the likelihood of CAM offering in hospices. Another distinguishing feature of this study is that all types of hospices will be surveyed, irrespective of organizational type (i.e., hospital-based, home-health agency, freestanding and nursing home), profit orientation (i.e., not-for-profit, for-profit, government), geography (rural or urban), and time of establishment (old or new). This all-inclusive approach will tend to more accurately represent and capture the overall trend and prevalence of CAM use by hospice patients in Texas. The specific objectives and related hypotheses of this study are outlined in section 3.1 and Table 3.1.

CHAPTER THREE: METHODOLOGY

This chapter describes the methods used in conducting this study. Earlier section provided information on study objectives, study design, sample frame and sample size determination, while later sections described the sampling method, study instrument, data collection procedures and statistical analyses.

3.1 STUDY OBJECTIVES

The specific objectives for this study are as follows:

Objective 1:

(a) To describe the types of CAM therapies most frequently offered in Texas hospices

(b) To describe CAM utilization based on reported hospice patients' race and gender

(c) To examine how hospices fund their CAM services

(d) To assess the kind of personnel most often utilized in delivering CAM services

(e) To assess the perceived importance of providing CAM as an additional hospice service

(f) To assess the perceived improvement to the overall quality of life of patients as a result of CAM utilization

(g) To assess the perceived obstacles and difficulties encountered by hospices in the provision of CAM services

Objective 2: To determine if the number of years hospices have been offering CAM is related to the number of CAMs offered by hospices.

Related Hypothesis

H_{A2}: *There is a significant positive relationship between the number of years hospices have been offering CAM and the number of offered CAMs in hospices.*

Objective 3: To assess if the extent of CAM use by patients is related to the number of CAMs offered by hospices.

Related Hypothesis

H_{A3}: *There is a significant difference in the number of offered CAMs by extent of patients' CAM use.*

Objective 4: To assess the relationship between geographic location and profit orientation of hospices.

Related Hypothesis

H_{A4}: *There is a significant association between geographic location and profit orientation of hospices.*

Objective 5: To explore the factors that influence the likelihood of CAM offering by hospices.

Related Hypothesis

H_{A5a}: *There is a significant positive relationship between the years of operation of hospices and hospices' likelihood to offer CAM, controlling for geographic location, agency type, profit orientation, Medicare certification status, and the number of patients served per year.*

H_{A5b}: *The likelihood of offering CAM differs significantly by levels of geographic location, controlling for years of hospices' operation, agency type, profit orientation, Medicare certification status, and the number of patients served per year.*

H_{A5c}: *The likelihood of offering CAM differs significantly by levels of agency type, controlling for years of hospices' operation, geographic location, profit orientation, Medicare certification status, and the number of patients served per year.*

H_{A5d}: *The likelihood of offering CAM differs significantly by levels of profit orientation, controlling for years of hospices' operation, geographic location, agency type, Medicare certification status, and the number of patients served per year.*

H_{A5e}: *The likelihood of offering CAM differs significantly by levels of Medicare certification, controlling for years of hospices' operation, geographic location, agency type, profit orientation, and the number of patients served per year.*

H_{A5f}: *There is a significant positive relationship between number of patients served by hospices and hospices' likelihood to offer CAM, controlling for years of hospices' operation, geographic location, agency type, profit orientation, and Medicare certification status.*

The level of significance for all analyses was $p<0.05$. Table 3.1 provides a summary of the objectives, related hypotheses, variable type, statistical tests and the corresponding survey item question.

Table 3.1: Summary of Objectives, Related Hypotheses, Variables, Statistical Tests and the Corresponding Survey Item Number						
Objectives	**Hypotheses**	**Dependent Variable**	**Primary Independent Variable**	**Covariates**	**Statistical Test**	**Survey Section: Item Number**
1. Descriptive, no hypotheses						
a. To describe the types of CAM therapies most frequently offered in Texas hospices	NA	NA	NA	NA	Descriptive statistics: counts and percentages	I:2
b. To describe CAM utilization based on reported hospice patients' gender and race	NA	NA	NA	NA	Descriptive statistics: counts and percentages	I:7,8
c. To examine how hospices fund their CAM services	NA	NA	NA	NA	Descriptive statistics: counts and percentages	I:10
d. To assess the kind of personnel most often utilized in delivering CAM services	NA	NA	NA	NA	Descriptive statistics: counts and percentages	I:9
e. To assess the perceived importance of providing CAM as an additional hospice service	NA	NA	NA	NA	Descriptive statistics: means and SD	I:5

Table: 3.1 (Continued)

Objectives	Hypotheses	Dependent Variable	Primary Independent Variable	Covariates	Statistical Test	Survey Section: Item Number
f. To assess the perceived improvement to the overall quality of life of patients as a result of CAM utilization	NA	NA	NA	NA	Descriptive statistics: means and SD	I:6
g. To assess the perceived obstacles and difficulties encountered by hospices in the provision of CAM services	NA	NA	NA	NA	Descriptive statistics: counts and percentages	I:11 & II:3
2. To determine if the number of years hospices have been offering CAM is related to the number of CAMs offered by hospices	There is a significant positive relationship between the number of years hospices have been offering CAM and the number of offered CAMs in hospices	CAMNumber: Interval	YearOffer: Interval	NA	Pearson's correlation	I:1,2
3. To assess if the extent of CAM use by patients is related to the number of CAMs offered by hospices	There is a significant difference in the number of offered CAMs by extent of patients' CAM use	CAMNumber: Interval	PatientUse: Categorical (<25%, 25 – 50%, 51 – 75%, >75%)	NA	One-way ANOVA	I:2,3

Table 3.1 (Continued)

Objectives	Hypotheses	Dependent Variable	Primary Independent Variable	Covariates	Statistical Test	Survey Section: Item number
4. To assess the relationship between geographic location and profit orientation of hospices	There is a significant association between geographic location and profit orientation of hospices	Tax: Categorical (Not-for-profit, For-profit)	Geography: Categorical (Rural, Urban)	NA	Chi-square	III:15,17
5. To explore the factors that influence the likelihood of CAM offering by hospices						
a.	There is a significant positive relationship between the years of operation of hospices and hospices' likelihood to offer CAM, controlling for other covariates	OfferCAM: Dichotomous (Yes/No)	Establish: Interval	Geography, Agency, Tax, Medicare, PatientCount	Logistic regression	III:14 – 19
b.	The likelihood of offering CAM differs significantly by levels of geographic location, controlling for other covariates	OfferCAM: Dichotomous (Yes/No)	Geography: Categorical (Rural, Urban = Ref	Establish, Agency, Tax, Medicare, PatientCount	Logistic regression	III:14 – 19

Table 3.1 (Continued)

Objectives	Hypotheses	Dependent Variable	Primary Independent Variable	Covariates	Statistical Test	Survey Section: Item Number
c.	The likelihood of offering CAM differs significantly by levels of agency type, controlling for other covariates	OfferCAM: Dichotomous (Yes/No)	Agency: Categorical (Hospital, Home-health, Nursing, Independent = Ref)	Establish, Geography, Tax, Medicare, PatientCount	Logistic regression	III:14 – 19
d.	The likelihood of offering CAM differs significantly by levels of profit orientation, controlling for other covariates	OfferCAM: Dichotomous (Yes/No)	Tax: Categorical (Not-for-profit, For-profit = Ref)	Establish, Geography, Agency, Medicare, PatientCount	Logistic regression	III:14 – 19
e.	The likelihood of offering CAM differs significantly by levels of Medicare certification, controlling for other covariates	OfferCAM: Dichotomous (Yes/No)	Medicare: Dichotomous (No/ Yes=Ref)	Establish, Geography, Agency, Tax, PatientCount	Logistic regression	III:14 – 19
f.	There is a significant positive relationship between number of patients served by hospices and hospices' likelihood to offer CAM, controlling for other covariates	OfferCAM: Dichotomous (Yes/No)	PatientCount: Interval	Establish, Geography, Agency, Tax, Medicare	Logistic regression	III:14 – 19

NA = Not Applicable; SD=Standard Deviation; Establish = Years of hospice operation; Geography = Geographic location of hospices; Agency = agency type of hospices; Tax = profit orientation status of hospices; Medicare = Medicare certification status of hospices; PatientCount = Average number of patients served per year in hospices; OfferCAM = Status of CAM offer; Ref = Reference categories.

3.2 STUDY DESIGN

This is a cross-sectional, non-experimental research design that utilized an adapted version of a self-reported and content validated mail survey instrument described by Demmer in the methodology and results sections of his 2004 study of complementary therapy services provided by hospices (Demmer, 2004). A mail survey was chosen above telephone and face-to-face interviews in this study for several reasons. First, mail surveys provide a sense of anonymity and privacy for obtaining otherwise private information that might be difficult to obtain in a face-to-face or telephone interview, especially if the interviewer is also personally known to the respondent. Second, mail surveys, when compared to face-to-face and telephone interviews, require the least amount of resources and are less susceptible to interviewer as well as respondent biases (Salant, 1994). Furthermore, a mail survey is more convenient and less subject to errors due to rushed-decision making as may be seen in face-to-face and telephone interviews (Nakash et al., 2006). However, the limitations of mail surveys include their sensitivity to non-coverage error (i.e., incomplete coverage of all potential members in the official member list) and low response rates (Salant, 1994). Nevertheless, the advantages enumerated above, as well as the study characteristics make a mail survey the most suitable alternative for this study.

3.3 SAMPLE FRAME

The study's population of interest is all Texas hospices. The study used the current list of registered hospices in Texas. Hospices in Texas are at liberty to register

with any combination of national and/or state hospice organizations of their choosing because of the trade benefits associated with being a registered member of at least one hospice organization.

3.3.1 Inclusion Criteria

This study surveyed all hospices in Texas irrespective of the location (rural or urban), agency type (i.e., hospital-based, home-health agency, freestanding, and nursing home), profit orientation type (i.e., not-for-profit, for-profit, government), and time of establishment (old or new). This strategy is significant because it tends to more accurately represent the overall trend and prevalence of CAM use by hospice patients.

3.3.2 IRB Procedures

This study received an expedited Institutional Review Board (IRB) approval from the Office of Research Support (ORS) of the University of Texas at Austin (IRB Protocol # 2010-12-0031).

3.4 SAMPLE SIZE DETERMINATION

Sample size determination is an a priori mathematical estimation of the number of subjects that should be included in a study in order to be able to detect a difference between two or more groups, if one truly exists (Last, 1995). This is especially important if a research question will include, among other things, a comparison between two groups or the prediction of variables from one another.

One of the main objectives of this study was to explore the factors that influence the likelihood that a hospice will offer CAM. Binary logistic regression analysis was used

to assess this objective. To determine the sample size needed to make a 95% confidence inference from the study, an a priori power estimation was conducted using G*Power ® version 3.1 software (Erdfelder, 1996). The software calculated the a priori total sample size (N) based on parameters that included the number of tails, significance level, power level, multiple correlations (R-squared) among predictors, the probability of occurrence of the outcome variable under the null hypothesis given the predictor variable, and the population effects size denoted by the estimated odds ratio. The G*Power software utilizes a large sample approximation and a test procedure that took into account the binomial distribution of both the outcome and predictor variables.

In order to calculate the total sample size required to show a significant association between at least one of the predictor variables and the outcome variable, an estimation of the odds ratio is necessary. The literature has limited information regarding the odds ratio (a measure of effects size) for the predictor variables of interest (hospices' age, geographic location, agency type, profit orientation, Medicare certification, and number of patients served). However, there is evidence that two of the predictor variables of interest (i.e., profit orientation and geographic location) were found to be significantly related to offer of CAM (Bercovitz, 2011; Running, 2008). Therefore, varying values of odds ratio were used to determine the sample size, while keeping constant the other parameters (i.e., number of tails, significance or α-level, power or β-level, multiple correlation between predictors or R-squared, and the binomial distribution of the

predictor variables) used in the sample size determination. (See Table 3.2 for a full description of the sample size estimation).

An additional parameter needed in this sample size estimation is the value of the probability of CAM offering under the null hypothesis for each of the predictor variables of interest [i.e., Pr (Y = 1| X = 1) H_0]. In previous studies of factors influencing the provision of CAMs in hospices, 72 percent of hospices that offered CAMs were located in rural areas (Running, 2008), while 68 percent of hospices that offered CAMs were not-for-profit hospices (Bercovitz, 2011).

Thus, a total sample size that ranged from 118 – 396 will be required to show that at least one of the predictor variables is associated with the outcome variable in the logistic regression model. Logistic regression is a form of maximum likelihood estimation where a large sample is desired for the regression model to adequately fit the data. Therefore, instead of using the minimum value of the estimated sample size, the whole population of Texas hospices (estimated N = 369) was surveyed in anticipation of having non-responders and given the fact that we had adequate resources to accommodate a larger project.

Table 3.2: Estimates of Sample Size for Logistic Regression			
Predictor variables	**Odds Ratio**	**Pr (Y=1|X=1) H_0[b]**	**Total sample size needed**
Rural (urban = ref)[a]	2.0	0.72	396
	2.5	0.72	247
	3.0	0.72	186
	3.5	0.72	153
	4.0	0.72	133
Not-for-profit (for-profit = ref)[a]	2.0	0.68	358
	2.5	0.68	221
	3.0	0.68	165
	3.5	0.68	136
	4.0	0.68	118
For each sample size determination, Number of tails = 2; $\alpha = 0.05$; $\beta = 0.8$; $R^2 = 0$; X-distribution = Binomial			

[a]Urban and for-profit hospices are the reference categories and are each coded zeros.
[b]The probability of CAM offering under the null hypothesis for rural and not-for-profit hospices.

3.5 SAMPLING METHOD

Hospices in Texas are by necessity mandated to register with either a local or national hospice organization. Thus, most Texas hospices are registered with the National Hospice and Palliative Care Organization (NHPCO) – the largest membership organization representing hospices in the U.S (National Hospice and Palliative Care Organization, 2010a). It is reasonable to assume that Texas hospices that are not registered with the NHPCO will register with the Texas and New Mexico Hospice Organization (TX&NMHO) – the local hospice organization. In fact, most hospices in Texas are registered with both organizations. In order to further account for those hospices that might not be registered with either of these organizations, hospices were further identified from another national hospice directory (i.e., United States Hospice). A member search was carried out on the websites of each of these organizations, and a member list was printed. As of February 2, 2011, there were 252, 183, and 163 Texas hospices listed on the NHPCO, TX&NMHO, and U.S. Hospice websites, respectively (National Hospice and Palliative Care Organization, 2011; Texas and New Mexico Hospice Organization, 2011; United States Hospice, 2011). By individually crosschecking the names and locations of hospices on each list, and then accounting for dual or triple memberships, 369 hospices were identified, and this number was assumed to represent the total hospice population in Texas.

3.6 STUDY INSTRUMENT

The study instrument was adapted from the description of the Demmer (2004) content-validated survey questionnaire. In this first study of its kind, Demmer conducted a nationwide survey of the complementary and alternative medicine (CAM) services provided by hospices (Demmer, 2004). Two other studies have subsequently modified the Demmer questionnaire for use in their surveys of hospices' use of CAM (Kozak et al., 2009; Running, 2008).

The survey instrument is divided into three main sections. The first section was addressed to those hospices that offer CAM, while the second section was addressed to those hospices that do not offer CAM. The third section contained demographic and practice settings questions that were addressed to all hospices irrespective of whether they offered CAM or not. The variable 'Offer CAM' was not included as part of the questionnaire but was implied from the responses to either section one (categorized as Offer CAM) or section two (categorized as Do Not Offer CAM). Some modifications were made as regards the coding for certain parts of section three (i.e., demographics and practice settings information). Items 16 [agency type, categorized as 1) Hospital, 2) Home-health, 3) Independent, 4) Nursing Home, and 5) Other (please specify)], and item 17 [profit orientation type, categorized as 1) Not-for-profit, 2) For-profit, 3) Government, 4) Other (please specify)] were recoded to reflect independent observations as opposed to the way they were presented in the survey (they were presented in form of multiple responses). There were three cases with multiple responses to either item 16 or item 17

and these cases were not included in the logistic regression analysis. See Table 3.3 for the full operational definitions and measurement levels of each variable, including location of the variable(s) in the survey instrument (See Appendix A for the full survey instrument).

Table 3.3: Operational Definitions of Variables Contained in the Survey Instrument			
Variable Name	**Operational Definition**	**Measurement level/Value labels**	**Survey Section (Number)**
Offer CAM	Does your hospice offer CAM?	Dichotomous: 1=Yes, 0=No	Inferred[a]
Year Offer	The year hospice began offering CAM	Interval	I (1)
CAM Types	List of CAM types offered by hospice	Dichotomous: 1=Yes, 0=No	I (2)
Patient Use	Proportion of hospice patients who used at least one CAM in the past year	Ordinal: 1=<25%, 2=25-50%, 3=51-75%, 4=>75%	I (3)
Avail CAM	Number of CAMs that are available for patients' use	Ordinal: 1=≤5, 2=6-10, 3=>10	I (4)
CAM Importance1	Perceived importance of offering CAM services as an additional hospice service in hospices offering CAM	Ordinal: 1=Very Unimportant, 2=Somewhat Unimportant, 3=Neither Important nor Unimportant, 4=Somewhat Important, 5=Very Important	I (5)
CAM QoL	Perceived improvement to overall quality of life of patients due to CAM use	Ordinal: 1=Strongly Disagree, 2=Disagree, 3=Neither Agree nor Disagree, 4=Agree, 5=Strongly Agree	I (6)
Gender	Reported gender of patients who most frequently utilized CAM	Categorical: 1=Male, 2=Female	I (7)
Ethnicity	Reported race of patients who most frequently utilized CAM	Categorical: 1=Non-Hispanic White or Caucasian, 2=Non-Hispanic Black or African American, 3=Mexican American or Hispanic, 4=Asian American or Pacific Islander, 5=Native American or American Indian, 6=Other (please specify)	I (8)
CAM Personnel	Personnel most often used in delivering CAM	Categorical: 1=Volunteer provider, 2=Salaried provider, 3=Utilize both about the same frequency	I (9)
Funding Types	List of possible sources of funding for CAM	Dichotomous: 1=Yes, 0=No	I (10)

Table 3.3 (Continued)

Variable Name	Operational Definition	Measurement level/Value labels	Survey Section (Number)
Obstacles1	List of obstacles to CAM provision in hospices offering CAM	Dichotomous: 1=Yes, 0=No	I (11)
Diseases	List of medical conditions that were managed using CAMs	Dichotomous: 1=Yes, 0=No	I (12)
CAM Importance2	Perceived importance of CAM as an additional hospice service in hospices not offering CAM	Ordinal: 1=Very Unimportant, 2=Somewhat Unimportant, 3=Neither Important nor Unimportant, 4=Somewhat Important, 5=Very Important	II (1)
CAM Interest	Hospices' interest in offering CAM in the near future	Ordinal: 1=Very Uninterested, 2=Somewhat Uninterested, 3=Neither Interested nor Uninterested, 4=Somewhat Interested, 5=Very Interested	II (2)
Obstacles2	List of obstacles to CAM provision in hospices not offering CAM	Dichotomous: 1=Yes, 0=No	II (3)
Title	Current position or title of respondent	Categorical: 1=Hospital Director, 2=Other (Please specify)	III (13)
Establish	The year hospice was established	Interval	III (14)
Geography	Geographic location of hospice	Categorical: 1=Rural, 2=Urban, 3=Suburban	III (15)
Agency Type	Agency type of hospice	Categorical: 1=Hospital, 2=Home-health, 3=Freestanding/Independent, 4=Nursing, 5=Other (Please specify)	III (16)
Profit Status	Profit orientation of hospice	Categorical: 1=Not-for-profit, 2=For-profit, 3=Government, 4=Other (Please specify)	III (17)
Medicare	Medicare certification status of hospice	Dichotomous: 1=Yes, 0=No	III (18)
PatientCount	Number of patients served per year	Interval	III (19)

[a]This was inferred depending on whether section I (addressed to hospices offering CAM) or section II (addressed to hospices not offering CAM) were completed.

3.7 PILOT TESTING OF STUDY INSTRUMENT

The survey was pilot-tested on a convenience sample of six hospice directors. They were asked to make comments and suggestions based on their experience and knowledge of hospice practice. The survey booklet, a cover letter and a survey evaluation form were sent electronically by email to the addresses of the hospice directors after obtaining their consent via telephone communication. Pilot testing the survey instrument helped: 1) identify parts of the questionnaire that were unclear, 2) determine if all issues important to the topic were covered, 3) assess the readability, relevance and format of the survey, and 4) determine the approximate time it took reviewers to complete the questionnaire (Polit, 2004). Achieving these objectives assisted in improving the overall survey design. The evaluated comments and feedback of reviewers were incorporated into the design of the final survey that was sent on a larger scale to the population of hospices in Texas. A copy of both the evaluation cover letter and form are included in Appendix B.

3.8 MAIL SURVEY DATA COLLECTION PROCEDURES

Study materials consisting of the questionnaire and a cover letter were mailed to each of the 369 identified hospice directors. The cover letter highlighted the purpose of the study, security and anonymity of responses, as well as the approximate time it would take respondents to complete the survey. Respondents were offered an aggregate summary of the study results as an incentive to respond. They were asked to return the questionnaire in one week upon receipt. Due to the anonymity of the first mail-out, a

follow-up mail-out consisting of a revised cover letter and another questionnaire copy were mailed to all hospices (except those hospice addresses that were returned as undeliverable) about three weeks after the initial mailing. Respondents were asked to return the questionnaire in one week upon receipt. Both the initial and follow-up questionnaires were collected over a six-week period. Copies of the initial and follow-up cover letters are included in Appendix C.

3.9 DATA ANALYSES: PREPARATION AND CLEANING

Data from the questionnaire was entered into and analyzed by Predictive Analytics SoftWare® (PASW®) Statistics GradPack18 for Windows® (SPSS Inc, 2009). All hypotheses were stated in the alternative hypothesis (H_A) format and given subscript numbers that correspond to their related objectives (See Table 3.1).

3.9.1 Preliminary Analyses

Data from the surveys were inputted into PASW® 18 (SPSS Inc, 2009) in preparation for primary analyses. Preliminary analyses involved conducting case analysis to identify any problematic observations (i.e., outliers) that may change important study results, and to assess the validity of assumptions associated with each of the statistical analyses conducted. These analyses included descriptive statistics (Objective 1), Pearson's correlation (Objective 2), one-way analysis of variance (ANOVA) (Objective 3), chi-square tests (Objective 4), and binary logistic regression (Objective 5).

3.9.2 Non-normality, Outliers, and Missing data

Inspection of the z-scores of all continuous interval variables was used to identify potential outliers that may change study results. Z-scores greater than 2.5 in absolute values were considered as outliers and were not included in the analyses. The normality assumption was considered not violated if the skewness and kurtosis values of the continuous variable were not in excess of |2| (Curran, 1996). Analysis of the data involved listwise deletion of cases with missing responses. Because there was a low incidence of missed responses, data was analyzed as is, without imputation of missing values.

CHAPTER FOUR: RESULTS

This chapter presents the results obtained from the analysis of the survey data. The chapter details respondents' demographic and practice setting characteristics as well as the hypotheses testing results of factors influencing the provision of CAM services in hospices.

4.1 SURVEY RESPONSE RATES

Data was collected between October and December 2011 via self-administered mail surveys and cover letters to 369 hospice directors in the state of Texas. By December 31, 2011, 110 completed surveys were received by mail, in addition to another 61 surveys that were returned as undeliverable. Therefore, 308 surveys were considered delivered, yielding a total usable response rate of 35.7% (110/308).

4.2 RESPONDENTS' DEMOGRAPHIC AND PRACTICE SETTING CHARACTERISTICS

A majority (n = 76, 70.4%) of the respondents were hospice directors, while the remaining 29.6% listed 'other' as their official title. These 'other' titles included administrator, owner, compliance officer, educator, director of client services, medical director, assistant administrator, patient care manager, branch manager, chaplain, and director of admissions.

A majority (n = 61, 56.5%) of the hospices surveyed were located in rural areas, however, the profit orientation status of the hospices was almost evenly split between not-for-profit (51.8%) and for-profit (48.2%) organizations. Virtually all (n = 105,

97.2%) of the hospices surveyed were Medicare-certified, with most (n = 82, 70.7%) being independent or freestanding in nature.

On average, the hospices surveyed have been in operation for 13.15 (SD = 8.79) years and serve a mean number of 625.11 (SD = 782.69) patients per year. Table 4.1 depicts the demographic and practice setting characteristics of the respondents.

Table 4.1: Respondents' Demographic and Practice Setting Characteristics[a]		
Variable	**Frequency (%)**	**Mean (SD)**
Title (n = 108)[b]		
Director	76 (70.4)	
Other [c]	32 (29.6)	
Geographical location of hospice (n = 108)[b]		
Rural	61 (56.5)	
Urban	33 (30.5)	
Suburban	14 (13.0)	
Agency type[d]		
Independent	82 (70.7)	
Hospital-based	13 (11.2)	
Home-health	14 (12.1)	
Nursing home	5 (4.3)	
Other	2 (1.7)	
Profit orientation status[d]		
Not-for-profit	58 (51.8)	
For-profit	54 (48.2)	
Government	0 (0.0)	
Other	0 (0.0)	
Medicare certification status (n = 108)[b]		
Yes	105 (97.2)	
No	3 (2.8)	
Number of years of hospice operation (n = 107)[b]		13.15 (8.79)
Number of patients served per year (n = 108)[b]		625.11 (782.69)

[a]Total number of respondents = 110.

[b]Frequency is less than 110 because of missing responses.

[c]'Other' title indicated by respondents include administrator, owner, compliance officer, educator, director of client services, medical director, assistant administrator, patient care manager, branch manager, chaplain, and director of admissions.

[d]Frequency is more than 110 due to a combination of missing and multiple responses.

4.3 UTILIZATION, PERCEIVED IMPORTANCE, AND INTEREST IN CAM

A majority of the respondents (n = 62, 56.4%) offered CAM in their hospices, with the most frequently offered CAMs being massage therapy (67.7% of respondents), music therapy (61.3%), relaxation (56.5%), spiritual healing (51.6%), and pet therapy (45.2%). On average, these hospices had been offering CAM for 7.35 (SD = 5.60) years, and an average number of 5.53 (SD = 2.86) CAM therapies were available for patients' use. However, a majority (n = 39, 62.9%) of these hospices that offered CAM indicated that less than a quarter of patients in their hospices utilized the offered CAMs. Moreover, a greater majority of respondents indicated that female (n = 48, 80.0%) and non-Hispanic whites (n = 47, 81.0%) patients were the most frequent users of CAM in their hospices (See Tables 4.2 and 4.3).

One item for each of the hospices that offer CAM and hospices that do not offer CAM measured perceived importance of offering CAM to hospice patients. The means for these items, respectively for hospices that offer CAM and those that do not offer CAM were 4.08 (SD = 1.26) and 3.50 (SD = 1.17) (possible range: 1 – 5; Table 4.4a). Forty-nine (80.3%) hospices that offered CAM thought it was 'somewhat' or 'very' important to add CAM services to the array of other hospice services provided to their clients, while 32 (72.7%) hospices that do not offer CAM thought it was 'somewhat' or 'very' important to add CAM services to the array of other hospice services provided to their clients.

For those hospices offering CAM, they 'agreed to strongly agreed' (mean ± SD = 4.26 ± 0.90) that the use of CAM improved the overall quality of life of their patients. For those hospices not offering CAM, they were 'neutral to somewhat interested' (mean ± SD = 3.80 ± 1.07) in offering CAM to their clients in the near future. However, a greater proportion (n = 32, 72.7%) of these hospices not presently offering CAM indicated that they are 'somewhat' or 'very' interested in offering CAM therapies to their patients in the near future (Table 4.4b).

Table 4.2: Most Frequently Offered CAM Therapies	
CAM Type	**Frequency (%)[a]**
Massage Therapy	42 (67.7)
Music Therapy	38 (61.3)
Relaxation	35 (56.5)
Spiritual Healing	32 (51.6)
Pet Therapy	28 (45.2)
Therapeutic Touch	27 (43.5)
Deep Breathing	22 (35.5)
Aromatherapy	20 (32.3)
Guided Imagery	20 (32.3)
Meditation	16 (25.8)
Diet	11 (17.7)
Herbal	11 (17.7)
Acupuncture	11 (17.7)
Hypnotherapy	9 (14.5)
Yoga	8 (12.9)
Energy Healing	5 (8.1)
Chiropractic	4 (6.5)
Megavitamins	3 (4.8)
Other[b]	1 (1.6)

[a]Total frequency is more than 62 and percentage total is more than 100% because of multiple responses. Only the responses of those hospices offering CAM (n = 62) were included.

[b]'Other' CAM indicated by a respondent includes reflexology.

Table 4.3: CAM Utilization by Gender, Ethnicity, and Proportion of Hospice Patients' Usage		
Variable	**Frequency (%)**	**Mean (SD)**
CAM offer status (n = 110)[a]		
Yes	62 (56.4)	
No	48 (43.6)	
Number of available CAMs (n = 62)		5.53 (2.86)
Number of years since offering CAM (n =		7.35 (5.60)
Gender of CAM user (n = 60)[b,c]		
Female	48 (80.0)	
Male	12 (20.0)	
Ethnicity of CAM user (n = 58)[b,c,d]		
Non-Hispanic White or Caucasian	47 (81.0)	
Non-Hispanic Black or African American	6 (10.3)	
Mexican American or Hispanic	5 (8.6)	
Asian American or Pacific Islander	0 (0.0)	
Native American or American Indian	0 (0.0)	
Proportion of hospice patients who used CAM within the past year (n = 62)		
<25%	39 (62.9)	
25 – 50%	11 (17.7)	
51 – 75%	5 (8.1)	
>75%	7 (11.3)	

[a]Total number of respondents = 110.
[b]N is less than 62 because of missing responses. Includes only the responses of those hospices offering CAM (n = 62).
[c]Hospice directors are the respondents, not hospice patients.
[d]Percentage total is less than 100% due to rounding.

Table 4.4a: Perceived Importance of Offering CAM in Hospices that Offer and Do Not Offer CAM								
Items	**Mean**	**SD**	**Frequency Distribution of Responses (%)**					
				Very unimportant (1)	**Somewhat unimportant (2)**	**Neither important nor unimportant (3)**	**Somewhat important (4)**	**Very important (5)**
1. How important is it for your patients to be offered CAM in addition to other palliative services (n = 61)[a]	4.08	1.26		5 (8.2)	4 (6.6)	3 (4.9)	18 (29.5)	31 (50.8)
2. Do you believe it is important for your patients to be offered CAM in addition to other hospice services (n = 44)[b]	3.50	1.17		6 (13.6)	2 (4.5)	4 (9.1)	28 (63.6)	4 (9.1)

[a]Includes the responses of only those hospices that offer CAM. Frequency is less than 62 because one person responded with a 'Don't Know.'

[b]Includes the responses of only those hospices that do not offer CAM. Frequency is less than 48 because of 'Don't Know' responses from four respondents.

Table 4.4b: Perceived Importance of CAM Utilization and Future Interest to Offer CAM								
Items	**Mean**	**SD**	**Frequency Distribution of Responses (%)**					
			Strongly disagree (1)	**Disagree (2)**	**Neither agree nor disagree (3)**	**Agree (4)**	**Strongly agree (5)**
3. The utilization of CAM services has improved the overall quality of life of my patients (n = 62)[a]	4.26	0.90	2 (3.2)	1 (1.6)	4 (6.5)	27 (43.5)	28 (45.2)
			Very uninterested (1)	**Somewhat uninterested (2)**	**Neither interested nor uninterested (3)**	**Somewhat interested (4)**	**Very interested (5)**
4. How interested would your hospice be in offering CAM therapies to your patients in the near future (n = 44)[b]	3.80	1.07	2 (4.5)	4 (9.1)	6 (13.6)	21 (47.7)	11 (25.0)

[a]Includes the responses of only those hospices that offer CAM.
[b]Includes the responses of only those hospices that do not offer CAM. Frequency is less than 48 because of 'Don't Know' responses from four respondents.

4.4 FACTORS INFLUENCING THE PROVISION OF CAM SERVICES

For hospices that offer CAM, most (n = 25, 40.3%) utilize volunteers to deliver their CAM services, with general hospice funds (n = 37, 59.6%) being the most prevalent form of funding used to pay for CAM delivery (See Table 4.5). In hospices that offer CAM, respondents indicated that the most common obstacles to CAM offering included short length of stay of patients (53.2% of respondents), lack of funds (45.2%), lack of qualified CAM personnel (43.5%), insufficient CAM knowledge by staff (40.3%), and lack of sufficient staff time (38.7%). In comparison, the most common obstacles to CAM offering in hospices that do not offer CAM included lack of qualified CAM personnel (75.0%), insufficient CAM knowledge by staff (68.8%), lack of funds (66.7%), lack of sufficient staff time (52.1%), and insufficient knowledge to offer CAM (52.1%) (See Tables 4.6 and 4.7).

Table 4.5: CAM Personnel and Funding	
Variable	**Frequency (%)**
Personnel (n = 62)	
Volunteer	25 (40.3)
Salaried	23 (37.1)
Utilize both equally	14 (22.6)
CAM funding (n = 62)[a]	
General hospice fund	37 (59.6)
Donations	23 (37.1)
Grants	11 (17.7)
Fundraisers	11 (17.7)
Insurance (private/public)	11 (17.7)
Memorial	9 (14.5)
Other[b]	5 (8.06)
Don't know	3 (4.84)

[a]Frequency is more than 62 and total percentage is more than 100% because of multiple responses. Only the responses of those hospices offering CAM (n = 62) were included.
[b]Other' types of funding indicated by respondents included volunteers and 'personal expenses.'

Table 4.6: Obstacles to Offering CAM in Hospices that Offer CAM	
Difficulty/Obstacle to CAM Offer (n = 62)	**Frequency (%)[a]**
Short length of stay of patients	33 (53.2)
Lack of funds	28 (45.2)
Lack of qualified CAM personnel	27 (43.5)
Insufficient CAM knowledge by staff	25 (40.3)
Lack of sufficient staff time	24 (38.7)
Insufficient knowledge of how to offer CAM	18 (29.0)
Patient/family resistance	13 (21.0)
Difficulty defining CAM	12 (19.4)
Hospice staff resistance	9 (14.5)
Reimbursement problem	8 (12.9)
Lack of support for bereavement services	7 (11.3)
Don't Know	5 (8.1)
No difficulty/problem	2 (3.2)

[a]Frequency is more than 62 and percentage total is more than 100% because of multiple responses. Includes only the responses of hospices that offer CAM (n = 62).

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Table 4.7: Obstacles to Offering CAM in Hospices that Do Not Offer CAM	
Difficulty/Obstacle to CAM Offer (n = 48)	**Frequency (%)[a]**
Lack of qualified CAM personnel	36 (75.0)
Insufficient CAM knowledge by staff	33 (68.8)
Lack of funds	32 (66.7)
Lack of sufficient staff time	25 (52.1)
Insufficient knowledge to offer CAM	25 (52.1)
Short length of stay of patients	22 (45.8)
Reimbursement problem	17 (35.4)
Difficulty defining CAM	16 (33.3)
Patient/family resistance	8 (16.7)
Hospice staff resistance	8 (16.7)
Not interested in offering CAM	3 (6.3)
Lack of support for bereavement services	1 (2.1)

[a]Frequency is more than 48 and percentage total is more than 100% because of multiple responses. Includes only the responses of hospices that do not offer CAM (n = 48).

4.5 HYPOTHESIS TESTING RESULTS

4.5.1 Pearson's correlation, ANOVA, and Chi-square analyses results

Data analyses were conducted using Pearson's correlation, one-way ANOVA, chi-square test, and binary logistic regression. All hypotheses were stated in the alternative hypothesis (H_A) format and given subscript numbers that correspond to its related objectives. H_{A1} was omitted because objective 1 was descriptive in nature.

> ***H_{A2}:*** *There is a significant positive relationship between the number of years hospices have been offering CAM and the available number of offered CAMs in hospices.*

Objective 2 was to determine if the number of years hospices have been offering CAM is related to the number of CAMs offered by hospices. Pearson's correlation was used to assess the related hypothesis (i.e., H_{A2}) of this objective. Descriptive statistics showed that the variable 'number of offered CAMs' was considered normally distributed as the absolute values of the skewness (-0.062) and kurtosis (-1.144) did not exceed the cut-off value of |2|. Similarly, the variable 'number of years since offering CAM' was considered normally distributed as the absolute values of the skewness (0.734) and kurtosis (-0.289) did not exceed the cut-off value of |2|. There was a significant positive correlation between the number of years hospices have been offering CAMs and the available number of offered CAMs by hospices (Pearson's $r = 0.343$, $n = 52$, $p = 0.013$). Therefore, H_{A2} was supported.

H_{A3}: *There is a significant difference in the number of offered CAMs by extent of patients' CAM use.*

Objective 3 was to assess if the extent of CAM use by patients was related to number of CAMs offered by hospices. A one-way ANOVA was used to assess the related hypothesis (i.e., H_{A3}) of this objective. Descriptive statistics showed that the dependent variable 'number of offered CAMs' was considered normally distributed as the absolute values of the skewness (0.050) and kurtosis (-1.065) was less than |2|. In addition, the assumption of equality of variance was not violated as the p-value (p = 0.373) associated with the Levene's test for equality of variance was greater than 0.05. There was no significant difference in the number of offered CAMs by extent of patients' CAM use (F = 1.222, df = 3, 58, p = 0.310). In other words, the extent to which patients used CAM was not significantly related to the number of CAMs offered by hospices. Therefore, H_{A3} was not supported. Table 4.8 depicts the ANOVA comparison of the dependent variable 'number of offered CAM' by the grouping variable 'extent of patients' CAM use.'

Table 4.8: ANOVA Comparison of Number of Offered CAMs by Extent of Patients' CAM Use (n = 62)

Extent of patients' CAM	**N**	**Mean**	**SD**	**F-value**	**d.f.**	**p-value**
<25 %	39	5.38	2.78	1.222	3, 58	0.310
25 – 50 %	11	6.91	3.42			
51 – 75 %	5	5.00	2.24			
>75 %	7	4.57	2.51			

H_{A4}: *There is a significant association between geographic location and profit orientation of hospices.*

Objective 4 was to assess the relationship between geographic location and profit orientation of hospices. Pearson's chi-square analysis was used to assess the related hypothesis (i.e., H_{A4}) of this objective. Geographic location was recoded from 'urban', 'suburban', and 'rural' into 'urban' and 'rural' (urban and suburban were merged) in conformity with the U.S. Census Bureau's rural-urban continuum classification (U.S. Census Bureau, 2010). The chi-square analysis showed a significant relationship between the geographical location and profit orientation status of the hospices surveyed (χ^2 = 4.558, n = 108, df = 1, p = 0.033). The majority (61.7%) of hospices located in urban areas (n = 47) are for-profit organizations, while the majority (59%) of hospices located in rural areas (n = 61) are not-for-profit organizations. Thus, H_{A4} was supported (See Table 4.9).

Table 4.9: Chi-square Association of Geographic Location and Profit Orientation of Hospices (n = 108)

		For-profit	**Not-for-profit**	**χ^2-value**	**d.f.**	**p-value**
Urban	**N**	29	18	4.558	1	0.033
	Row %	61.7	38.3			
Rural	**N**	25	36			
	Row %	41.0	59.0			

4.5.2 Binary logistic regression analyses results

Objective 5 was to explore the factors that influence the likelihood that a hospice will offer CAM. Binary logistic regression analysis was used to assess the related hypotheses (i.e., H_{A5a-f}) of this objective. The assumption of correct model fit of the logistic regression was supported as the p-value ($p = 0.705$) associated with the Hosmer-Lemeshow tests was greater than the significance level of 0.05. The chi-square test of the difference in fit between the null model (i.e., the constant model containing no predictor) and the model containing all eight predictors (i.e., the overall model test) was significant ($\chi^2 = 17.162$, $n = 105$, $df = 8$, $p = 0.028$). This suggested that at least one of the predictor variables was related to the outcome. See Table 4.10 for a summary of the binary logistic regression of predictors that are related to offer of CAM.

Table 4.10: Binary Logistic Regression of Predictors Related to Offer of CAM (N = 105)[a]

Predictor variable	**B**	**Wald**	**Odds Ratio**	**p-value**	**95% C.I.**	
					Lower	**Upper**
Establish	0.056	3.136	0.946	0.077	0.889	1.006
Rural[b]	-0.567	1.341	0.567	0.247	0.217	1.481
Agency[b]						
Hospital	-0.702	0.863	0.496	0.353	0.113	2.178
Home-	1.243	2.538	3.466	0.111	0.751	15.995
Nursing	1.176	0.938	3.243	0.333	0.300	35.060
Not-for-profit[b]	1.328	5.209	3.772	0.022[d]	1.206	11.797
Medicare	-1.045	0.654	0.352	0.419	0.028	4.421
Patient Count[c]	0.123	5.890	1.131	0.015[d]	1.024	1.249
(Constant)	0.887	0.493	2.427	0.483		

[a]N is less than 110 due to missing responses
[b]Reference categories: Urban, Independent, and For-profit hospices
[c]PatientCount (raw values in hundreds)
[d]Significance at $p < 0.05$
N = 105, Model $\chi^2 = 17.162$, df = 8, $p = 0.028$, $R^2 = 0.202$

Dependent variable is modeled on the probability of 'OfferCAM'| x = 'yes'
B = Unstandardized coefficients, C.I. = Confidence Interval.

H_{A5a}: *There is a significant positive relationship between the years of operation of hospices and hospices' likelihood to offer CAM, controlling for geographic location, agency type, profit orientation, Medicare certification status, and the number of patients served per year.*

Even though normality is not required but is desirable for a binary logistic regression model (Long, 1997), descriptive statistics showed that the continuous variable 'years of hospice operation' was normally distributed as the absolute values of the skewness (0.476) and kurtosis (-0.868) were less than |2|. There was no significant positive relationship between the years of operation of a hospice and the hospices' likelihood to offer CAM, controlling for other covariates (OR = 0.946, 95% CI = 0.889 – 1.006, p = 0.077). Thus, H_{A5a} was not supported (See Table 4.10).

H_{A5b}: *The likelihood of offering CAM differs significantly by levels of geographic location, controlling for years of hospices' operation, agency type, profit orientation, Medicare certification status, and the number of patients served per year.*

Geographic location consisted of rural and urban categories, with the latter being the referent category. There was no significant difference between hospices that offer and those that do not offer CAM by geographic location, controlling for other covariates (OR = 0.567, 95% CI = 0.217 – 1.481, p = 0.247). In other words, there was no significant difference between rural and urban hospices with respect to the likelihood of offering of CAM services. H_{A5b} was not supported (See Table 4.10).

H_{A5c}: *The likelihood of offering CAM differs significantly by levels of agency type, controlling for years of hospices' operation, geographic location, profit orientation, Medicare certification status, and the number of patients served per year.*

Categories for agency type of hospices included hospital, home-health, nursing, and independent-based hospices, with the later being the referent category. Controlling for other covariates, there was no significant difference between independent- and hospital-based hospices with respect to offer of CAM services (OR = 0.496, 95% CI = 0.113 – 2.178, p = 0.353). Similarly, there was no significant difference between independent hospices and home-health hospices with respect to offer of CAMs, controlling for other covariates (OR = 3.466, 95% CI = 0.751 – 15.995, p = 0.111). Finally, there was no significant difference between independent hospices and nursing home hospices with respect to offer of CAMs, controlling for other covariates (OR = 3.243, 95% CI = 0.300 – 35.060, p = 0.333). Thus, H_{A5c} was not supported (See Table 4.10).

H_{A5d}: *The likelihood of offering CAM differs significantly by levels of profit orientation, controlling for years of hospices' operation, geographic location, agency type, Medicare certification status, and the number of patients served per year.*

Profit orientation categories of hospices included 'not-for-profit' and 'for-profit', with the later being the referent category. Results showed that there was a significant

difference between hospices that offer and those that do not offer CAM by profit orientation status, controlling for other covariates. Specifically, controlling for other covariates, the odds of offering CAM service in 'not-for-profit' hospices are approximately four times higher than in 'for-profit' hospices (OR = 3.772, 95% CI = 1.206 – 11.797, p = 0.022). Thus, H_{A5d} was supported (See Table 4.10).

***H_{A5e}**: The likelihood of offering CAM differs significantly by levels of Medicare certification, controlling for years of hospices' operation, geographic location, agency type, profit orientation, and the number of patients served per year.*

Medicare certification was a yes/no dichotomous variable. The binary logistic regression results showed that there was no significant difference between hospices that offer and those that do not offer CAM by Medicare certification status, controlling for other covariates (OR = 0.352, 95% CI = 0.028 – 4.421, p = 0.419). Therefore, H_{A5e} was not supported (See Table 4.10).

***H_{A5f}**: There is a significant positive relationship between number of patients served by hospices and hospices' likelihood to offer CAM, controlling for years of hospices' operation, geographic location, agency type, profit orientation, and Medicare certification status.*

The variable 'average number of patients served per year by hospices' was considered normally distributed as the skewness (1.415) and kurtosis (1.919) values were less than |2| in absolute values. Nevertheless, a new variable was obtained by dividing the original variable by 100. This was done to enhance convergence of the model as the

standard deviation associated with the original variable was excessively high compared to the standard deviations of other variables in the logistic regression model (Long, 1997). Results indicated that for every 100 patients served by hospices, the odds of offering CAM increases by 13%, controlling for other covariates (OR = 1.131, 95% CI = 1.024 – 1.249, p = 0.015).Thus, H_{A5f} was supported (See Table 4.10).

4.6 SUMMARY OF TESTS OF HYPOTHESES AND CAM PROVISION IN THE U.S.

Table 4.11 gives a summary of the hypotheses test results. Four of the nine hypotheses were supported, while five were not supported.

Table 4.12 gives a summary of the methodology and key findings of studies of CAM use in U.S. hospices.

Table 4.11: Summary of Hypotheses Tests		
Hypothesis	**Statistical test**	**Conclusion**
H_{A2}: *There is a significant positive relationship between the number of years a hospice has been offering CAM and the available number of offered CAM in the hospice*	Pearson's correlation	**Supported**
H_{A3}: *There is a significant difference in the number of offered CAM by extent of patients' CAM use*	ANOVA	Not supported
H_{A4}: *There is a significant relationship between geographic location and profit orientation of hospices*	Chi-square	**Supported**
H_{A5a}: *There is a significant positive relationship between the years of operation of hospices and hospices' likelihood to offer CAM, controlling for other covariates*	Logistic regression	Not supported
H_{A5b}: *The likelihood of offering CAM differs significantly by levels of geographic location, controlling for other covariates*	Logistic regression	Not Supported
H_{A5c}: *The likelihood of offering CAM differs significantly by levels of agency type, controlling for other covariates*	Logistic regression	Not Supported
H_{A5d}: *The likelihood of offering CAM is significantly greater in not-for-profit hospices than in for-profit hospices, controlling for other covariates*	Logistic regression	**Supported**
H_{A5e}: *The likelihood of offering CAM differs significantly by levels of Medicare certification, controlling for other covariates*	Logistic regression	Not Supported
H_{A5f}: *There is a significant positive relationship between the number of patients served by hospices and hospices' likelihood to offer CAM, controlling for other covariates*	Logistic regression	**Supported**

Table 4.12: Summary of CAM Provision in U.S. Hospices					
	Demmer, 2004	**Running, 2008**	**Kozak et al., 2009**	**Bercovitz, 2011**	**Olotu et al., 2012**
Survey method	Mail	Mail	Telephone	Face-to-face	Mail
Coverage	Nationwide	Statewide (Nevada and Montana)	Statewide (Washington state)	Nationwide	Statewide (Texas)
Number of respondents	169	27	36	590	110
Response rate	56	50	100	57	35.7
Percentage of hospices that offered CAM	60	70	86	42	56
Most popularly offered CAMs	Massage therapy Music therapy Therapeutic touch Pet therapy Guided imagery	Massage therapy Music therapy Guided imagery Therapeutic touch Pet therapy	Massage therapy Music therapy Energy healing Guided imagery Aromatherapy	Massage therapy Supportive therapy Music therapy Pet therapy Guided imagery	Massage therapy Music therapy Relaxation Spiritual healing Pet therapy

CHAPTER FIVE: DISCUSSION AND CONCLUSION

This chapter provides a discussion of the study results. Earlier sections will discuss the characteristics of hospices and CAM utilization, while later sections will discuss factors influencing the provision of CAM, study limitations, future research, and study implications.

5.1 RESPONSE RATE

This study's response rate of 35.7 percent was low compared to other studies of CAM utilization in U.S. hospices. Two studies using mail surveys had response rates of 56 percent (Demmer, 2004) and 50 percent (Running, 2008), while studies using face-to-face and telephone surveys reported response rates of 57 percent (Bercovitz, 2011) and 100 percent (Kozak et al., 2009), respectively. The sample size (n = 105) included in our regression analysis was slightly lower than the estimated minimum sample size (i.e., n = 118). However, there is evidence to show that a sample size that is not less than 100 is adequate for a good-fitting logistic regression model (Long, 1997).

5.2 DEMOGRAPHIC AND PRACTICE SETTING CHARACTERISTICS

In this study, surveys were sent to all Texas hospices (N = 369) identified from two national (United States Hospice, and the National Hospice and Palliative Care Organization), and one state (Texas and New Mexico Hospice Organization) hospice directories. This is a methodological improvement over previous CAM utilization studies (Demmer, 2004; Kozak et al., 2009; Running, 2008) that employed fewer than three directories in identifying potential hospice respondents.

In terms of representativeness of hospice programs' characteristics, the results of our study are consistent with the 2009 national estimates by the National Hospice and Palliative Care Organization (NHPCO). Their estimate indicated that a majority (58%) of U.S. hospice programs are independent or freestanding in nature, while others are a part of hospital systems (21%), home-health agencies (20%), or nursing homes (1%). Our results indicated that a majority (71%) of hospices in Texas are independent or freestanding hospices, while the remaining are a part of home-health agencies (12%), hospital systems (11%), and nursing homes (4.3%).

In addition, the NHPCO estimates showed that of the hospices that were nationally surveyed in 2009, ninety-three percent were Medicare certified. The proportions of hospices that were independent and not-for-profit in nature were 58 percent and 49 percent, respectively. This estimate is also consistent with the results of our study which showed that nearly all (97.2%) of hospices surveyed were Medicare certified, with a majority (70.7% and 51.8%) being independent and not-for-profit in nature, respectively.

5.3 UTILIZATION AND PERCEIVED IMPORTANCE OF CAM

In our study, a majority of hospices offered CAM to their patients. The most commonly offered CAMs included massage, music, relaxation, spiritual healing, and pet therapies. However, most hospices that offered CAM indicated that a small proportion of their patients utilized the offered CAMs.

Few studies have investigated the prevalence of CAM utilization (i.e., offering and use) in U.S. hospice patients (Bercovitz, 2011; Demmer, 2004; Kozak et al., 2009; Running, 2008). Nevertheless, the findings of these previous studies of hospices' CAM utilization are consistent with the results of our study as it relates to the most frequently offered CAMs and the proportions of hospice patients that utilized the offered CAMs. In most of these studies, the CAMs that were most commonly offered to patients included massage, music, and pet therapies, with less than a quarter of hospice patients utilizing these offered CAMs. However, this low CAM utilization level among hospice patients is incongruent with the philosophy underlying the management of the terminally ill in hospices. This philosophy upholds, recognizes, and utilizes all forms of therapy – including CAMs – that could help alleviate the pain and suffering of patients at the end of their lives (National Hospice and Palliative Care Organization, 2010a).

Previous studies have shown that the utilization of hospice services in general tend to differ by race and gender of patients, with utilization being higher in non-Hispanic white females (duPreez et al., 2008; Hill, 2008; Stevenson et al., 2007). Studies involving CAM utilization in non-institutionalized U.S. population (Barnes et al., 2008; Eisenberg et al., 1998; Eisenberg et al., 1993) and in hospices (National Hospice and Palliative Care Organization, 2010b) also indicated that female and non-Hispanic Whites are the highest users of CAM therapies. The results from our study are consistent with these previous studies, such that females (80%) and non-Hispanic whites (81%) were the most frequent users of CAM.

However, the levels of CAM utilization among non-institutionalized populations seems to be higher compared to the level of use in institutionalized settings such as hospices (Barnes et al., 2008). Irrespective of this low utilization, our study indicated that hospices tend to value the potential improvement to the overall quality of life of patients that resulted from CAM utilization. To this end, it was not surprising that a majority (80%) of hospices that offered CAM in our study believed it was important to include CAM services as an additional hospice service that is offered and provided to patients. Interestingly, a majority (73%) of those hospices that do not currently offer CAM services also believed that it was important to make CAM services available to their clients. In Demmer's (2004) study, virtually all (90%) of the hospices that offered CAM believed it was important to provide CAM as an addition to other hospice services.

The utilization of CAM therapies has also been shown to increase patients' satisfaction with end-of-life care through improvement in the overall quality of life (Demmer & Sauer, 2002; Milligan et al., 2002; Osaka et al., 2009). Our study also showed that, among hospices that offered CAM, most respondents agreed that the utilization of CAM has improved the overall quality of life of their patients. Existing research is consistent with this finding (Demmer, 2004; Running et al., 2008). For example, Running (2008) reported that respondents in hospices providing CAM believed the utilization of CAM improved the overall physical, psychological, and emotional well being of their patients.

Those hospices that do not offer CAM seem to express about the same optimistic view concerning the perceived importance of CAM at improving overall health and quality of life of patients just as hospices that offered CAMs. In our study, a majority (73%) of these hospices indicated that they are interested in offering CAM therapies to their clients in the near future, even though they are not able to do so at present due largely to financial and personnel constraints. Demmer (2004) also observed a similar phenomenon in his study of hospices' utilization of CAM. Thus, it is evident that a majority of hospices – and hopefully, patients – are enthusiastic about CAM therapies as an important complement to other therapies that are utilized in end-of-life care.

5.4 FACTORS INFLUENCING THE PROVISION OF CAM IN HOSPICES

5.4.1 Obstacles to CAM provision

The Medicare Hospice Benefit (MHB) is the major source of reimbursement for hospice services in the United States (Hoyer, 1998; Van Houtven et al., 2009; Wilson, 1993). However, even though terminally ill patients can pay for a substantial part of their hospice services through the MHB, it appears that a substantial proportion of CAM services are not reimbursed through the MHB. Funding was a primary obstacle to the provision of CAM in this study as well as previous studies of CAM use in hospices (Demmer, 2004; Kozak et al., 2009). Existing research has found that hospices often depend on a combination of volunteers, grants and charity to help in the funding and provision of CAM services to their clients (Demmer, 2004; Kozak et al., 2009). Our study supports previous findings since most of the funding for CAM services originated

from a combination of general hospice funds, donations, grants, memorials, and fundraiser activities. Only a very small percentage of the funding for CAM services was attributable to either a private or a public insurance. This suggests that CAM services are not currently being reimbursed through the MHB – the primary compensatory avenue for a majority of hospice services.

The use of CAM services in end-of-life care has been shown to be significantly associated with the extent of insurance coverage for CAM users (Jang et al., 2010; Wolsko et al., 2002). The study by Chiriboga et al. (2010) indicated that insurance coverage is an enabling factor that significantly increases an individual's likelihood of endorsing a willingness to use hospice care. Since a majority of CAM services are not covered by MHB, it is therefore not surprising that the level of utilization of these services is low despite their availability in a majority of hospices. In a study that assessed the status of managed care and insurance coverage of CAM services offered by hospitals, a majority of the insurers indicated that the primary motivation for coverage of CAM was potential cost-effectiveness based on consumer interest and evidence-based clinical efficacy of the therapy (Pelletier et al., 1997).

There is ample evidence from the literature to suggest that CAM services such as massage and music therapies are now widely available, clinically effective, and therapeutically useful to terminally ill patients (Cassileth, 2004; Freeman et al., 2006; Lafferty et al., 2006; Magill & Berenson, 2008; O'Callaghan & McDermott, 2004; Post-White et al., 2003; Preece, 2002). Massage and chiropractic therapies are CAM

modalities that are already widely recognized and used in mainstream America and in most western worlds. Their successes have been anchored largely on the fact that they are highly regulated professions that utilize modern diagnostic techniques, and their practices require board certification of members (Meeker & Haldeman, 2002; Snyder, 2007). Perhaps now is the time for these 'proven' therapies to be fully integrated into the reimbursement policy of the Medicare Hospice Benefit so that payment would not be a barrier for their utilization by patients receiving end-of-life care.

Apart from funding problems, our study highlighted other challenges that limit the ability of hospices to provide CAM services to patients. Irrespective of whether a hospice provided CAM or not, some of the most pressing obstacles to CAM offering included short length of stay of patients, lack of qualified CAM personnel, insufficient CAM knowledge by staff, and lack of sufficient staff time. Similar obstacles to CAM offering have been reported in the literature (Demmer, 2004; Running, 2008). These findings suggest that for CAM to be widely available and utilized in hospices, issues of funding, personnel, education, and time will need to be addressed. Hospices are not likely to develop and expand CAM services without adequate funds, support from staff, and demand for these services from patients and families. If these problems are not adequately addressed, hospices that currently offer CAM may limit or reduce the number of CAM therapies that are already available for patients' use.

5.4.2 Years of hospices' operation

One of the study objectives was to determine if CAM offering was dependent on the number of years a hospice has been in operation. Multivariate logistic regression analyses revealed no significant relationship between the years of operation of a hospice and the hospices' likelihood to offer CAM, which is contrary to previous research (Demmer, 2004). Differences between our findings and Demmer's (2004) research may be attributed to our use of multivariate analyses that controlled for other covariates that could correlate with the probability of CAM offering in hospices.

5.4.3 Geographic location of hospices

Another study objective was to examine if CAM offering was dependent on the geographic location (i.e., rural or urban) of hospices. Previous studies have shown that rural-urban differences exist with respect to availability of hospice services in the United States (Lackan et al., 2004; Virnig et al., 2004). The Virnig et al. (2004) study found that hospice services were not available in 23 percent of most rural zip codes compared to 1.3 percent of urban zip codes that were not served by hospices.

However, Running (2008) specifically examined the relationship between CAM offering (a form of hospice service) and geographic location of hospices. In their study of hospices' use of CAM therapies in Nevada and Montana, no significant relationship existed between geographic location and hospices' likelihood to offer CAM therapies ($\chi^2 = 0.002$, df = 1, p = 0.97). This finding is consistent with the results of our study.

The discrepancy between our and Running's (2008) study with previous research examining geographical differences could be explained by the fact that CAM therapies are not presently considered a part of the core components of hospice services and are therefore not currently reimbursed through the MHB as compared to other hospice services. This difference in coverage might be a moderating factor of the relationship between geographical location and hospices' CAM service provision. Previous research shows that as the rural-urban classification progressed from least rural to most rural, there was a corresponding decrease in both the number of Medicare certified hospices and the number of core hospice services provided to patients (Campbell et al., 2009). The Medicare Hospice Benefit guarantees that a hospice will have adequate financial resources to hire the needed health care practitioners who are then able to provide patients with a wider variety of hospice services.

5.4.4 Agency type of hospices

An additional objective of the study was to examine if CAM offering was dependent on the agency type (i.e., independent, home-health, nursing, or hospital) of hospices. It was hypothesized that the likelihood of offering CAM differs significantly by levels of agency type. Though there is limited evidence of an association between CAM offering and agency type of hospices, research has shown that the number of services provided by a hospice differs depending on the type of the agency (Rich & Gruber-Baldini, 2009).

In their cross-sectional study that utilized data from the 2000 National Home and Hospice Care Survey, Rich & Gruber-Baldini (2009) found that non-mixed agencies (i.e., freestanding independent hospices) were significantly more likely to have more hospice patients and to provide a wider variety of services than mixed agencies (i.e., home-health, nursing homes, and hospital-based agencies that possesses 'hospice' certification in addition to their basic certification for practice). Hospices with a larger number of patients are able to distribute costs of services more evenly among patients, and thus may be more likely to provide a wider array of hospice services, including CAM services. Though not statistically significant, the results of our study indicated that independent hospice agencies tended to have more patients and to provide more CAM services when compared to other agency categories.

5.4.5 Profit orientation of hospices

Another important study objective was to examine if CAM offering was dependent on the profit orientation (i.e., for-profit or not-for-profit) type of hospices. It was hypothesized and supported that the likelihood of offering CAM differs significantly by the level of profit orientation. Not-for-profit hospices were significantly more likely than for-profit hospices to offer CAM services. Similar to our findings, Bercovitz et al. (2011), using data from the 2007 National Home and Hospice Care Survey (NHHCS), found a significant association between CAM offering and profit orientation of hospices. Of the hospices that offered CAM (N = 433, 41.8%), the proportion [i.e., 68% (95% C.I. = 58 – 79%)] of not-for-profit hospices that offered CAM was significantly greater

compared to the proportion [i.e., 38% (95% C.I. = 23 – 53%) of for-profit hospices that offered CAM. (Note: the authors did not present odds ratio values of the logistic regression analysis results).

Staffing patterns in hospices have also been shown to differ significantly between for-profit and not-for-profit hospices, with for-profit hospices utilizing fewer volunteers per total staff compared to not-for-profit hospices (Cherlin et al., 2010). This observation is congruent with results of studies where most hospices utilize volunteers as the primary staff for delivery of CAM services (Demmer, 2004; Running, 2008). This difference between for-profit and not-for-profit hospices in terms of CAM provision might reflect the historical importance of volunteers as the mainstay provider of compassionate care in hospices. Even at present, volunteer service is a mandated portion of every hospice program that is reimbursed through the MHB (Center for Medicare & Medicaid Services, 2010). However, because of the high cost associated with end-of-life care and a continuous increase in demand for hospice services, it became clear that hospice services could no longer be sustained on volunteer efforts alone (M. D. A. Carlson et al., 2007; Han et al., 2006). Thus, more hospices are losing their initial not-for-profit status in order to be able to fund their multidisciplinary care that includes physician services, respite care, social services and bereavement care. This was also evident in our study where the hospices surveyed comprised of about equal proportions of for-profit (48.2%) and not-for-profit (51.8%) organizations.

5.4.6 Medicare certification of hospices

An additional objective of the study was to examine if CAM offering was dependent on the Medicare certification status of hospices. Multivariate logistic regression analyses revealed no significant relationship between Medicare certification and hospices' likelihood to offer CAM. Currently, there is limited evidence of the relationship between CAM offering and Medicare certification status of hospices. However, studies have shown that a significant and positive association exists between Medicare hospice certification and provision of other hospice services (Carlson et al., 2008; Van Houtven et al., 2009). In the Carlson et al. (2008) study that utilized data from the 1992-2000 National Home and Hospice Care Survey, the provision of a broader range of services by hospices was found to be significantly associated with Medicare certification. However, this relationship was not supported in terms of offering CAM services in the present study. This inconsequential effect of Medicare certification on hospices' provision of CAM services might be due to the fact that CAM services are not currently being reimbursed through the MHB.

5.4.7 Number of patients served by hospices

Lastly, one of the study objectives was to examine if CAM offering was dependent on the number of patients served by hospices. It was hypothesized and supported that a significant positive relationship existed between the number of patients served by hospices and hospices' likelihood to offer CAM. Thus, the probability that a

hospice will offer CAM increases as the number of patients served by the hospice increases.

Previous studies have shown that there is an association between hospices' size and the provision of hospice services (Jarosek et al., 2009; Lindley et al., 2009). The study by Jarosek et al. (2009) indicated that hospices with a larger size and for-profit status were significantly more capable of providing end-of-life services.

However, few studies have specifically examined the relationship between the number of patients served by a hospice and hospices' likelihood to offer CAM services. Results of Demmer's (2004) study indicated that hospices that offered CAM had more patients than hospices that do not offer CAM ($p<0.01$). Our multivariate findings corroborate this univariate relationship as well.

In another study that supports this relationship, Bercovitz et al. (2011) indicated that chain affiliation – and by extension, large hospice size – was significantly associated with whether a hospice offered CAM. In that study, the proportion [i.e., 75% (95% C.I. = 64 – 86%)] of hospice providers who offered CAM that were part of a chain was significantly greater compared to the proportion [i.e., 48% (95% C.I. = 35 – 61%)] of hospice providers who offered CAM that were not affiliated with a chain. These findings suggests that larger organizations are equipped with a disproportionately greater amount of financial and human resources, and are thus more capable of providing both core and non-core hospice services compared to smaller organization.

5.5 STUDY LIMITATIONS

The findings from this study should be interpreted in light of several limitations. First, this study utilized a cross-sectional study design, and the relationships expressed among variables may change over time. Second, self-reports from hospice directors were used as proxies for some questions that would have ideally been answered by the patients themselves. These responses may be prone to certain degrees of inaccuracies because they were anonymously collected and verification is impracticable. In addition, there is a tendency for response bias due to poor recall and the inclination for respondents to reply to certain questions in a socially desirable manner. In our survey, some respondents may have provided socially desirable responses to questions pertaining to the importance of CAM to patients' overall quality of life and to their future interest to offer CAM. Third, despite utilizing a second mailing to improve the survey response rate, only 35.7 percent of the delivered surveys were returned. Since the study was anonymous, it is difficult to compare the characteristics of the responders and non-responders. Thus, selection bias may be a problem as only hospices that are interested in the notion of CAM services might have responded. This low response may limit the generalizability of the study findings. Nevertheless, the demographic and practice setting characteristics of respondents were mostly similar to U.S. statistics on hospices.

5.6 SUGGESTIONS FOR FUTURE RESEARCH

The results of our study indicated that despite the fact that a majority of respondent hospices in Texas made CAM services available to their patients, a very small

proportion of these terminally ill patients are utilizing the available CAMs. Evidence from our study indicated that this underutilization might not be due to resistance to CAM therapies from patients and family members, but may be attributed to reimbursement deficiencies for CAM services. However, since we cannot accurately extrapolate problems associated with patients' CAM underutilization directly from problems of CAM provision as provided by hospices, future studies should collect CAM utilization outcomes directly from patients.

Furthermore, this study is one of a very few that has examined the relationships between intrinsic hospice characteristics and provision of CAM services. Further research should seek to validate the findings of this study in other U.S. states. In order to improve generalizability and enhance comparability of this study's findings, we encourage other studies to utilize a larger sample size and employ a predictive analytical strategy that is similar to the one utilized in this study.

5.7 IMPLICATIONS AND CONCLUSION

The majority of hospices in Texas offer CAM services to their clients with the most popularly offered CAMs being massage, music, and relaxation therapies. Despite the availability of CAM services in most hospices, and the fact that the utilization of CAM has the potential to improve overall quality of life of patients, our results showed that a sizeable proportion of patients in these hospices are not utilizing the provided CAMs. This observation might be connected with the fact that CAM services are currently not being reimbursed through the MHB, a government program that a majority

of hospices depend upon for the coverage of substantial portions of their end-of-life services.

Apart from funding challenges, it is apparent that certain intrinsic characteristics of hospices contribute to the inability of hospices to provide comprehensive end-of-life care that includes CAM services. This study is among the first to examine such hospice characteristics and their relationship with the availability of CAM services using a robust methodological strategy. The results of our study indicate that the odds of CAM offering significantly increase for hospices that are large and non-profit in nature.

It is obvious that CAM is an important component of hospice services that has the potential of benefitting patients at the end of their lives. Therefore, in order for hospices to continue to provide CAM services, and for patients to optimally utilize CAM therapies, it is evident that obstacles to CAM provision will have to be surmounted. Hospices are not likely to develop and expand CAM services without adequate funds, support from staff, and demand for these services from patients and families. Adequate solutions to these problems may mean that hospices that currently provide CAMs can expand their services, while those that are not currently providing CAMs can make future accommodations.

Appendix A: Survey Instrument

UTILIZATION OF COMPLEMENTARY AND ALTERNATIVE MEDICINE (CAM) SERVICES: A SURVEY OF TEXAS HOSPICES

We are interested in the provision and utilization of complementary and alternative medicine (CAM) in Texas hospices. Examples of CAM include massage therapy, yoga, relaxation therapy, herbals, acupuncture, etc. Please answer the following questions to the best of your knowledge based on your experience as a professional hospice worker. Please check the item(s) that correspond to your response or write in your response as appropriate.

HOSPICES THAT <u>DO</u> PROVIDE CAM: PLEASE COMPLETE ONLY <u>SECTIONS I & III.</u>
HOSPICES THAT <u>DO NOT</u> PROVIDE CAM: PLEASE COMPLETE ONLY <u>SECTIONS II & III.</u>

SECTION I: PROVISION OF CAM SERVICES

This section contains questions about the nature, importance and provision of CAM services in your hospice. Please check the item(s) or write in your response as appropriate.

1. In what year did your hospice begin offering CAM services? _____ (year)

2. Does your hospice offer any of the following CAM therapies? (Please check all that apply)
   - ❒ Meditation
   - ❒ Diet-based therapy
   - ❒ Therapeutic touch
   - ❒ Yoga
   - ❒ Hypnotherapy
   - ❒ Aromatherapy
   - ❒ Relaxation techniques
   - ❒ Herbal medicine/Natural products
   - ❒ Guided imagery
   - ❒ Acupuncture
   - ❒ Spiritual healing/Self-prayer
   - ❒ Pet therapy
   - ❒ Chiropractic
   - ❒ Energy healing/Reiki
   - ❒ Massage therapy
   - ❒ Megavitamins
   - ❒ Music therapy
   - ❒ Deep-breathing exercises
   - ❒ Other (please specify): _____

3. In your estimation, what percentage of your patients used at least one of the offered CAM therapies listed above within the past year? (Please check only one)
   - ❒ < 25%
   - ❒ 25 – 50%
   - ❒ 51 – 75%
   - ❒ > 75%

4. In your estimation, what is the total number of CAM therapies or services that are available for use by patients in your hospice? (Please check only one)
   - ❒ ≤ 5
   - ❒ 6 – 10
   - ❒ > 10

5. How important is it for your patients to be offered CAM services in addition to other palliative hospice services?
   - ❒ Very Unimportant
   - ❒ Somewhat Unimportant
   - ❒ Neither Important nor Unimportant
   - ❒ Somewhat Important
   - ❒ Very Important
   - ❒ Don't Know

6. The utilization of CAM services has improved the overall quality of life of my patients.
   - ❒ Strongly Disagree
   - ❒ Disagree
   - ❒ Neither Agree nor Disagree
   - ❒ Agree
   - ❒ Strongly Agree
   - ❒ Don't Know

7. In your opinion, which of your male or female clients is the most frequent user of CAM? (Please check one)
   - ❒ Male
   - ❒ Female

8. In your opinion, which of the following ethnic/racial categories of your clients is the most frequent user of CAM? (Please check one)
   - ❒ Non-Hispanic White or Caucasian
   - ❒ Non-Hispanic Black or African American
   - ❒ Mexican American or Hispanic
   - ❒ Asian American or Pacific Islander
   - ❒ Native American or American Indian
   - ❒ Other

Please continue on next page

9. Which of the following personnel do you utilize most often for the delivery of your CAM services? (Please check one)
   - ❒ Volunteer provider
   - ❒ Salaried provider
   - ❒ Use both about the same frequency

10. From the following list, please indicate the types of funding that help provide for the delivery of CAM services in your facility. (Please check all that apply)
   - ❒ General hospice fund
   - ❒ Donations
   - ❒ Grants
   - ❒ Fundraisers
   - ❒ Memorial funds
   - ❒ Insurance (public/private)
   - ❒ Don't know
   - ❒ Other (please specify): _____

11. Which of the following difficulties or obstacles are encountered in the delivery of CAM services in your facility? (Please check all that apply)
   - ❒ None – no difficulties or obstacles are encountered in the delivery of CAM services
   - ❒ Lack of sufficient staff time
   - ❒ Lack of funds
   - ❒ Lack of qualified CAM therapy personnel
   - ❒ Resistance from patients and/or families
   - ❒ Resistance from hospice staff
   - ❒ Lack of organizational support of bereavement services
   - ❒ Insufficient knowledge by staff about CAM therapies
   - ❒ Difficulty in defining/documenting CAM therapies
   - ❒ Problems with reimbursement
   - ❒ Insufficient knowledge about how to offer CAM therapies
   - ❒ Short length of stay of patients
   - ❒ Don't know
   - ❒ Other (please specify): _____

12. Which of the following diseases (or their symptoms) do you use CAM to manage in your patients? (Please check all that apply)
    - ❒ Anxiety
    - ❒ Back/neck/joint pain
    - ❒ Cancer (of any type)
    - ❒ Coronary heart disease
    - ❒ Dementia/Alzheimer's disease
    - ❒ Diabetes
    - ❒ Head or chest cold
    - ❒ HIV/AIDS
    - ❒ Kidney Disease
    - ❒ Lung Disease
    - ❒ Severe headache or migraine
    - ❒ Stroke or coma
    - ❒ Other (please specify): _____

Please continue on page 6

SECTION II IS ONLY FOR HOSPICES THAT DO NOT PROVIDE CAM

SECTION II: REASONS FOR NOT OFFERING CAM SERVICES

We understand that your hospice facility does not provide CAM at this time, however, we would like to know some of the reasons your hospice does not offer CAM services, and whether you plan to offer it in the near future. Please check the item(s) or write in your response as appropriate.

1. Do you believe it is important for your patients to be offered CAM therapies in addition to other hospice services?
   - ❒ Very Unimportant
   - ❒ Somewhat Unimportant
   - ❒ Neither Important nor Unimportant
   - ❒ Somewhat Important
   - ❒ Very Important
   - ❒ Don't Know

2. How interested would your hospice be in offering CAM therapies to your patients in the near future?
   - ❒ Very Uninterested
   - ❒ Somewhat Uninterested
   - ❒ Neither Interested nor Uninterested
   - ❒ Somewhat Interested
   - ❒ Very Interested
   - ❒ Don't Know

3. Which of the following are the difficulties or obstacles to providing CAM services in your facility? (Please check all that apply)
   - ❒ Not interested in delivering CAM services
   - ❒ Lack of sufficient staff time
   - ❒ Lack of funds
   - ❒ Lack of qualified CAM therapy personnel
   - ❒ Resistance from patients and/or families
   - ❒ Resistance from hospice staff
   - ❒ Lack of organizational support of bereavement services
   - ❒ Insufficient knowledge by staff about CAM therapies
   - ❒ Difficulty in defining/documenting CAM therapies
   - ❒ Problems with reimbursement
   - ❒ Insufficient knowledge about how to offer CAM therapies
   - ❒ Short length of stay of patients
   - ❒ Don't know
   - ❒ Other (please specify): _____

Please continue on next page

ALL RESPONDENTS SHOULD COMPLETE SECTION III

SECTION III: DEMOGRAPHICS AND PRACTICE SETTING INFORMATION

Now, we would like to know a little about you and your practice setting so that we can better understand your responses. Please check the item(s) or write in your response as appropriate.

13. What is your current position or title?
    - ❒ Hospice Director
    - ❒ Other (please specify): _____

14. In what year was your hospice established? _____ (year)

15. How would you classify the geographic location of your hospice? (Please check only one)
    - ❒ Rural
    - ❒ Urban
    - ❒ Suburban

16. How would you classify the agency type of your hospice? (Please check all that apply)
    - ❒ Part of a hospital system
    - ❒ Part of a home-health agency
    - ❒ Freestanding/Independent
    - ❒ Part of a nursing home
    - ❒ Other (please specify): _____

17. How would you classify the organizational tax status of your hospice? (Please check all that apply)
    - ❒ Not-for-profit
    - ❒ For-profit (privately owned or publicly held entities)
    - ❒ Government (Federal, state, or local municipality)
    - ❒ Other (please specify): _____

18. Is your hospice Medicare-certified?
    - ❒ Yes
    - ❒ No

19. On average, how many patients does your hospice serve per year?_____patients/year

Please continue on next page

Please share with us any additional comments or suggestions you may have regarding the provision of CAM services in your hospice.

_____

_____

_____

_____

_____

_____

_____

If you would like an aggregate summary of the results, please email Busuyi Olotu at buzzlotus@mail.utexas.edu

Thank you for taking the time to help us better understand how CAM services are offered and used in Texas hospices!

Please fold the questionnaire with the business reply on the outside. Secure it with tape and drop it in any mailbox. No postage is necessary.

Thanks again for your participation!

Appendix B: Pilot Study Cover Letter and Evaluation Form

Survey Evaluation Cover Letter

DATE: JUNE 14, 2011

TO: REVIEWERS

CC: CAROLYN M. BROWN, PHD

FROM: BUSUYI OLOTU, B. PHARM

RE: STUDY OF COMPLEMENTARY AND ALTERNATIVE MEDICINE (CAM) USE IN TEXAS HOSPICES

Thank you for agreeing to review the attached survey, which is a study of CAM use among hospice patients. The objectives of the study include:

1. Investigating the types of CAM therapies most frequently offered and used in Texas hospices
2. Examining if a patient's gender or race is related to their use of CAM
3. Examining how hospices fund their CAM services, and the kind of personnel mostly employed in delivering the services
4. Assessing the obstacles and difficulties hospices encounter in the delivery of CAM services

We are interested in any comments you might have regarding the survey's content and format before we begin the larger study. Please utilize the attached evaluation sheet for your review. Also, please feel free to mark on the survey as appropriate, as all materials will be reviewed.

We ask that you complete your review of our survey by:

Tuesday, June 28, 2011

Please return the Evaluation Sheets and Surveys via fax to Dr. Brown at 512-471-8762.

Thanks again for your participation. We certainly appreciate it!

N.B: Please remember to make a record of the time you start and complete the survey.

Survey Evaluation Form

Please evaluate the attached survey based on your experience and knowledge of hospice practice. After taking the survey, please respond to the following questions:

Readability of the statements - Is each statement clear? Understandable?
Relevance of statements - Is each statement relevant to the research topic? Are any issues of importance missing?
Format of survey: Is the format user-friendly? Did you find it hard to follow? Any suggestions for improvement?
Time to complete the survey: Please record the time (in minutes) that it takes to complete the survey:

Additional Comments:

Appendix C: Mail Survey Cover Letters

Cover Letter For Survey Research

Dear Hospice Director,

You have been selected to participate in a statewide research study, entitled "Complementary and Alternative medicine (CAM) utilization in Texas hospices: prevalence and challenges." The purpose of this study is to investigate the types of CAM therapies most frequently offered to and used by patients in hospice settings. This questionnaire is part of a thesis research project being conducted in the Division of Pharmacy Administration of the University of Texas at Austin. Your response to the survey will also help us better understand the obstacles and difficulties encountered in the delivery of CAM services in hospices.

Because you represent an integral part of the Texas hospice community, we hope that you will participate so that our results will be a good representation of the views of the entire population of Texas hospices. Your decision to participate or not participate will not affect your present or future relationship with the University of Texas at Austin. Although participation is voluntary, we feel that it is important you make yourself heard on an issue that might positively affect your practice.

The survey takes approximately 10 minutes to complete. All responses are anonymous and the study records will be stored securely. Responses will only be reported in an aggregated format, and your response cannot be linked back to you because no personal identifying data will be collected in the questionnaire. After completing the survey, please fold it, making sure the business reply page is on the outside, secure with tape, and mail it back to us by **October 14, 2011**. No postage is necessary.

If you have any questions, please do not hesitate to contact us by phone at (512) 471- 3066 and (512) 471-2374 or email buzzlotus@mail.utexas.edu and cmbrown@mail.utexas.edu. If you have questions about your rights as a research participant or any complaints or concerns, please contact James Wilson, Ph.D., Chair, The University of Texas at Austin Institutional Review Board (IRB) for the protection of Human Subjects at (512) 471-6978, or the Office of Research Support at (512) 471-8871, or email: orsc@uts.cc.utexas.edu.

Thank you in advance for your time and cooperation in participating in this important study.

Sincerely,

Busuyi Olotu, B. Pharm.
M.S. Candidate
Division of Pharmacy Administration

Carolyn M. Brown, R.Ph., Ph.D.
Professor and Thesis Advisor
Division of Pharmacy Administration

Follow-Up Cover Letter

Dear Hospice Director,

About three weeks ago, you were mailed a survey concerning the nature and types of complementary and alternative medicine (CAM) offered and used in your hospice. If you have already completed the survey, please accept our sincere thanks. You received this follow-up letter since our survey is anonymous, and it is unknown whether you responded initially or not. If you have not yet completed the questionnaire, we kindly ask for your assistance by completing it as soon as possible.

Again, this survey is part of a thesis research project being conducted in the Division of Pharmacy Administration of the University of Texas at Austin. The purpose of this study is to investigate the types of CAM therapies most frequently offered to and used by patients in hospice settings. Your response to the survey will also help us better understand the obstacles and difficulties encountered in the delivery of CAM services in hospices.

Because you represent an integral part of the Texas hospice community, we hope that you will participate so that our results will be a good representation of the views of the entire population of Texas hospices. Your decision to participate or not participate will not affect your present or future relationship with the University of Texas at Austin. Although participation is voluntary, we feel that it is important you make yourself heard on an issue that might positively affect your practice.

The survey takes approximately 10 minutes to complete. All responses are anonymous and the records of the study will be stored securely. Responses will only be reported in an aggregated format, and your response cannot be linked back to you because no personal identifying data will be collected in the questionnaire. After completing the survey, please fold it, making sure the business reply page is on the outside, secure with tape, and mail it back to us by **November 4, 2011**. No postage is necessary.

If you have any questions, please do not hesitate to contact us by phone at (512) 471- 3066 and (512) 471-2374 or email buzzlotus@mail.utexas.edu and cmbrown@mail.utexas.edu. If you have questions about your rights as a research participant or any complaints or concerns, please contact James Wilson, Ph.D., Chair, The University of Texas at Austin Institutional Review Board (IRB) for the protection of Human Subjects at (512) 471-6978, or the Office of Research Support at (512) 471-8871, or email: orsc@uts.cc.utexas.edu.

Thank you in advance for your time and cooperation in participating in this important study.

Sincerely,

Busuyi Olotu, B. Pharm.
M.S. Candidate
Division of Pharmacy Administration

Carolyn M. Brown, R.Ph., Ph.D.
Professor and Thesis Advisor
Division of Pharmacy Administration

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